

FLIGHT

&
The AIRCRAFT
ENGINEER.

First Aero Weekly in the World.
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NOTICE.—With this issue is published a double-page picture "To the Rescue," after an original drawing by Charles Dixon, R.I.

EDITORIAL COMMENT.

"Newspapers are an essential part of our war organisation."
(Sir Auckland Geddes, Minister of National Service.)

HERE is only one main objective in war, which is to impose your will upon the enemy and compel him to do as you wish. Sometimes this object is fully accomplished, and the enemy is compelled to surrender unconditionally. More often one side admits that it has been so far defeated that it is willing to discuss terms of peace which will leave it with its national self-respect impaired, but will admit of reconstruction on a basis which will ultimately result in its return to its former rank among the Powers of the world. What we are fighting for now is to bring Germany to the point at which she will lay down her arms and submit to Allied dictation in the settlement that must follow the cessation of hostilities. Germany, on the other hand, knowing now that

she must be beaten, is fighting on in the hope that the Allies will ultimately consent to meet her at the conference table as an equal, and will negotiate a peace which will leave her in a position to later on make another and possibly more successful bid for the domination of the world. We may succeed in our object of forcing an unconditional surrender, but we shall be better advised if we assume for the present that the ultimate terms of peace will fall somewhat short of that and will take the shape defined in President Wilson's fourteen clauses. Therefore it will be somewhat in the nature of a compromise between absolute dictation and what we call a "peace by negotiation."

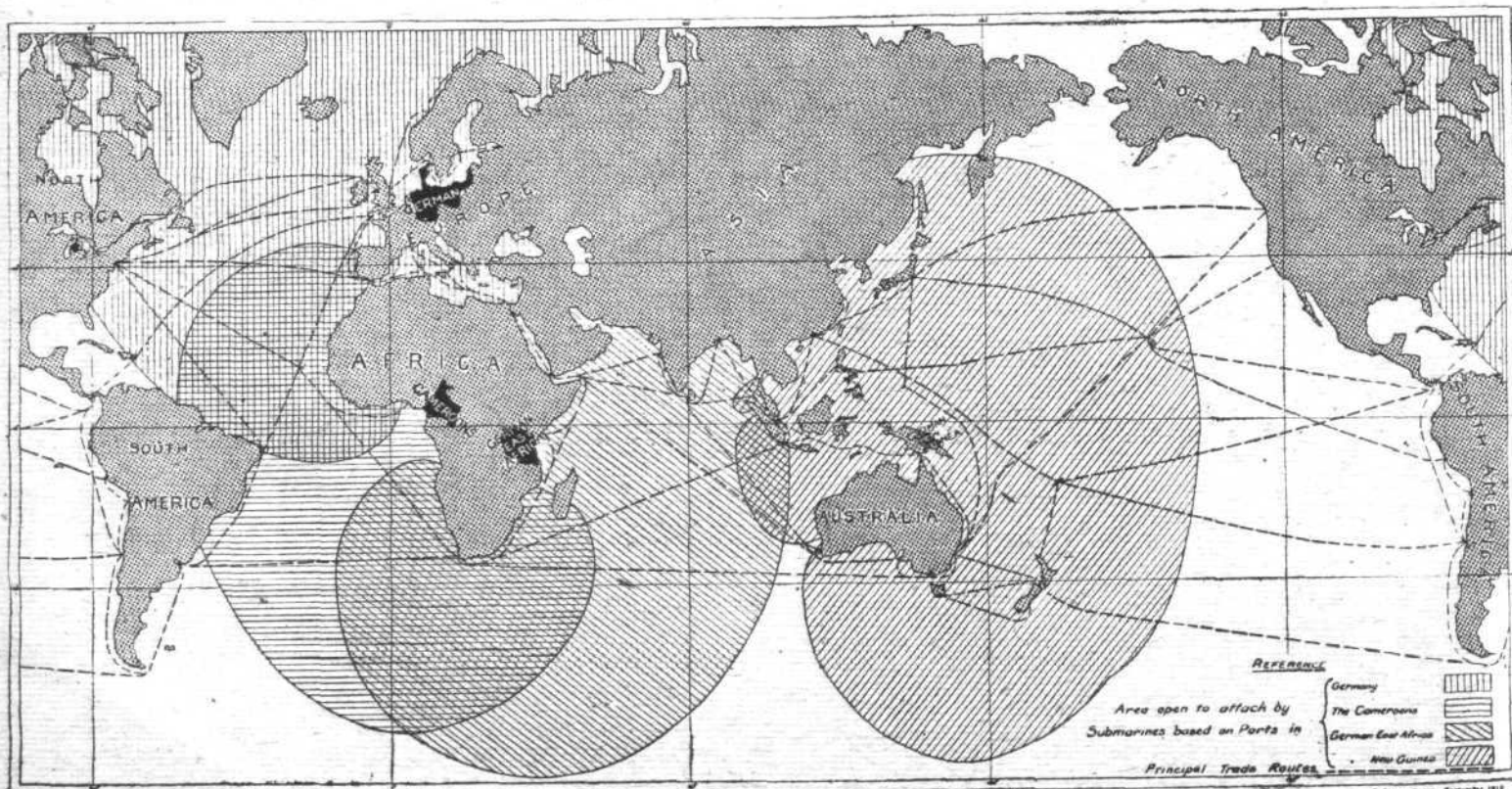
Proceeding on that assumption, we have to examine very carefully the outlines of the possible terms we can concede to a beaten Germany, lest by an apparently harmless concession in some one direction we should place in her hands a weapon which will enable her in the future to again make a bid for world dominion. Again, assuming that we shall discuss terms with the Hun, we can take it as certain that he will be found very willing, even anxious, to make every concession in Europe if in return we will consent to hand back his colonies. We can see that he means to have them returned if the Allies are so weak and foolish as to fall into the trap. The utterances of German statesmen and official orators emphasise that. Hindenburg, Ludendorff, the Crown Prince, Count Hertling and others have in recent speeches laid stress on Germany's need of colonial expansion. The Cologne Gazette has described the restoration of the colonies as the principal German war aim. The justification is that Germany wants raw materials, which she can only obtain from her own colonies. The clear answer to that is that the total value of the exports from the German African colonies before the war amounted in value to £5,000,000 annually—a very small proportion, indeed, of the total German import of raw materials. Another point in this connection is that if Germany needs raw materials she can purchase them in the open markets of the world in the manner that other non-colonial countries obtain them. Clearly, then, the raw materials excuse will not hold water. Why, then, does Germany lay so much stress on the return of the colonies as an essential antecedent to peace? The answer is contained in a speech made last May by one Capt. von Weise, who said: "We need colonies in the Pacific for military and strategic reasons. We need naval bases."

This raises at once the question of why Germany wants naval bases remote from her own coasts. On this page will be found a chart of the world which at a glance supplies all the answer that is necessary. Now, Germany does not expect to win this war, but what she does realise now is that science has placed in her hands a weapon, in the shape of aircraft and the submarine, with which, given that we are foolish enough to allow her the bases from which to use them, she can within a very few years wage another and probably successful war against civilisation. Germany had such faith in her submarines based on the North Sea ports that she confidently believed she could win the war within six months of the inauguration of unrestricted submarine war. She miscalculated, but only by a very little, and next time—if we permit any "next time"—with submarines and aircraft based not only on her own North Sea ports but on ports in the Atlantic, Pacific and Indian Oceans, she will see to it that there is no miscalculation. By confining her to the North Sea we deprive her in very large measure of her power for evil, and with her power diminished we can confidently expect a diminution of her will for evil.

In studying the chart we must keep it well before our eyes that war, whether land or sea, centres about communications. The main object of operations is to deny the right of way to the enemy, while keeping our own highways open. In this war, for example, we are fighting to keep open our maritime communications, and it is to that end that the battle-fleets, with their attendant cruisers, flotillas and aircraft exist. The enemy's battle-fleet, being the weaker, refuses action, and our own fleet holds the ring while the battle for the right of way is fought out between the submarine and its opponents. So long as the former is held we can keep our sea communications open, but the moment it obtains the mastery they are closed to us and we must suffer defeat. Take the analogy to the war on land. We have given the American armies the right of way

across the Atlantic; the French have given it almost to the gates of Metz. But the Americans want the right of way to Berlin, which the German armies dispute. We see, therefore, that it is a perfectly truthful proposition that war resolves itself into a fight for the right of through communications. Now, we see from the chart that submarines and aircraft operating from Germany's colonial and home ports could dominate the whole of the trade routes of the world. There is not a single main maritime highway which is not covered by the radii, and in several places these radii actually overlap. At the present time, with Germany confined to submarine bases in the North Sea, we are compelled to keep in commission more than 10,000 vessels to deal with the menace, and even then we are only able to hold it. We have not stamped it out. If, then, Germany were given back her colonies and allowed to establish submarine and aircraft bases, it scarcely needs to be pointed out that the strain which would be thrown upon ourselves in case of another war would be terrific. In sober truth, it could not be supported. In such an eventuality Germany would be able to stop the whole maritime traffic of the world, and civilisation would be at her feet in a very few months.

The main question, therefore, that will have to be faced is this: Are we to put into the hands of an aggressive Power such as we know Germany to be a weapon which carries with it the strongest possible temptation to again embark upon a war with the object of making good what she has failed to achieve in this? There are other and grave reasons against allowing Germany ever to own a foot of territory outside of Europe, but these are quite subsidiary to the one we have discussed. The point is that we are fighting this war in the interests of the future security of the free peoples of the world, and we thus dare not leave anything to chance. With Germany once more in her old colonies it cannot be pretended that security has been provided against future aggression, and the answer to the question which the Hun will



Trade areas in which German submarines could operate if Germany had naval bases in the Cameroons, German (late) East Africa, and German (late) New Guinea.

put with all his subtlety—that he be given back his former overseas possessions—must be most emphatically in the negative.

There is little doubt that there will be many, even in this country, who will support the German demand and raise the cry of Imperialism. The answer to that must be that Britain does not want to add to her Colonial Empire and does not care what becomes of the German colonies, so long as they do not return to Germany or her allies to be held in trust for her. If we must keep them and administer them ourselves, we shall only undertake the task in the interests of the future peace and security of the world. However they may be disposed of in the end, the one thing is crystal clear—that they cannot go back whence they were taken.

How to Deal with Strikes.

The Government has done a wise and proper thing in the manner in which the strike of the Clyde shipwrights has been handled. There is no *via media* in these days. The man who is fit and of fighting age must either do his bit in an essential calling, or, if he will prefer not to do it, must go and share in the risks of the battlefield. As the Government proclamation pointed out, skilled men of military age are retained in their occupations because the State considers that they are of more use to the community in their own occupation than they would be in the ranks of the Army. They are "protected" against military service because of that, and obviously if they refuse to follow their proper occupations the sole reason for "protection" vanishes and they must fight. It is not the first time that the State has had to apply the remedy of withdrawing protection in the case of strikers. In another notorious strike a number of exemptions were withdrawn and the Army received the perhaps doubtful benefit of an influx of young slackers who had thought themselves too powerful to be touched. It was a case on all fours with the Clyde strike, in which the workers were led away by the delusion that they could hold a pistol to the head of the State. Unfortunately, the manner in which industrial troubles have too often been handled has given some slight colour to the belief that if brigandage is only of the organised kind it can secure whatever it wants and the State dare not lift a hand. There has been a want of firmness in dealing with these outbreaks which has led to deplorable effects in the industrial world, and has been responsible for troubles which would never have come to a head if the workers concerned had been assured before the start that in attempting to fight the State they were but kicking against the pricks.

There is another unfortunate aspect of the present position, connected with the wholesale ownership and control of industries by the State. The worker is accustomed to regard the State as a paymaster of unlimited resources and as an employer that can afford to pay anything in or out of reason for what it must have. From that state of mind to the demand for more and yet more in payment for services is a very short step indeed. Where the private employer is concerned, however, the workers have sense enough to know that resources are limited, even if large, and that there is a point beyond which greater demands must only lead to the death of the goose which lays the golden eggs. True it is only one of the reasons

why State ownership of industry is a bad thing for the community, but it is nevertheless an important one, and should in nowise be omitted from the indictment against State trading.

The Essential Characteristics of Aviators.

In the current issue of the *Lancet* there is printed an exhaustive report on "The Essential Characteristics of Successful and Unsuccessful Aviators," by Capt. T. S. Rippon, R.A.M.C., and Lieut. E. G. Manuel, R.A.F. The authors of the report are a pilot of 600 hours' experience and a medical officer stationed at an aerodrome. Their observations led them to the conclusion that the mark of the successful aviator was the possession of a suitable temperament, and the report sets forth a description of this faculty as shown in the cases they personally studied. The authors point out that the enormous number of pilots who have qualified recently is a proof that the aviator is not a "super-man." It is true that we see certain men who perform marvellous feats, but when we come to talk to them and examine them with regard to physique and mentality it is found that they are quite ordinary men. Flying is not now confined to the public school boy, the cavalry officer or the athlete. Many pilots are taken from the lower middle classes and some from the artisan class. The most useful method of discovering whether or not the candidate or pupil is likely to become successful is to study the life history of the pilots who are known to be efficient. This, say the authors, demonstrates the fact that there are many characteristics common to the successful pilot which are absent from the pupil who has been withdrawn from instruction in flying, on account of lack of aptitude.

The report is too long for reproduction in full, but we give a number of extracts from it on another page. It will be gathered from these that the observations of the authors of the report have led them to the conclusion that, in the first place, the successful aviator invariably has all the attributes of the sportsman. As a schoolboy, he has always taken part in games, and has usually played for his school in at least one branch of athletics. After leaving school, he has kept it up and has joined the Air Force because he is keen on flying and it appeals to his sporting instincts. He is usually under 25 years of age, the explanation obviously being that the resiliency of youth enables him to more rapidly become accustomed to a new occupation and to recover quickly from the strain and stress he is called upon to undergo. On the other hand, it is seldom that a first-class pilot is drawn from the ranks of sedentary workers.

Another curious fact which is brought out by the report is that the married pilot is seldom as successful as the single. As the authors point out, marriage is a definite handicap owing to the increased sense of responsibility it brings with it. If a man marries after he has flown for several hundreds of hours, and flying has become automatic, marriage may not apparently affect him for some time. In some cases it may even make him steadier and more careful, but sooner or later it will in most cases have a definitely deteriorating effect. Although this objection might be urged in the case of any other branch of the service, yet a careful consideration will show that there are special reasons why marriage is an

exceptional disadvantage to the pupil under instruction. The training of officers for the infantry, for example, is practically unaccompanied by danger, and it is only when drafted overseas that danger begins. By this time they have learnt all their duties, and the discipline acquired will help them to face the possibilities. The pupil who is learning to fly, however, faces dangers as great in some ways as he will ever be called to undergo. Being generally in England, he has not the feeling that he is in the actual zone of hostilities, and the risks he runs are taken, as it were, in cold blood. The unmarried man, faced with the possibility of crashing during his first solo, in most cases dismisses the thought or takes the risk in the same way as a rider puts his horse at a fence in strange country. The married man has the knowledge of what death may mean to his wife and family, and has, moreover, the opportunity of

discussing it with his wife, and thus manufactures in his own home a condition of nervousness which eventually becomes so great that he confesses to his instructor that he has completely lost his nerve. That this is no mere theory is borne out by a table in which are given the times occupied under instruction by thirty pupils, fifteen being married and fifteen single men. The analysis of the table shows that the average time of instruction in the case of the married officers was 62.5 days, and in that of the unmarried only 28.86 days. That may be accepted as literal proof of the thesis.

There are other aspects of the report to which we should like to refer, but as they will be found in the summary printed elsewhere, it is not necessary to deal with the whole of them in detail. The report as a whole is an exceedingly interesting document, and will be, we should say, of marked statistical value.

HONOURS

M.C. for R.A.F. Officer.

It was announced in a supplement to the *London Gazette* on September 24th that H.M. the King has been pleased to approve of the award of the Military Cross to the following officer in recognition of his gallantry and devotion to duty in the Field :—

Lieut. REGINALD CHARLES VAN DER BEN, Gen. List and R.A.F.—For conspicuous gallantry and devotion to duty. When on contact patrol this officer was severely wounded in the leg from the ground. Notwithstanding this, he continued his offensive action, machine gunning the enemy troops, and told his pilot to carry on, thus enabling him to complete his reconnaissance.

M.Ms. for Brave Nurses.

It was announced in the *London Gazette* Supplement of September 24th that H.M. the King has been pleased to approve of the award of the Military Medal to the following ladies for distinguished services in the Field :—

Matron EDITH CAMPBELL, R.R.C., C.A.M.C.—For gallantry and devotion to duty during an enemy air raid. Regardless of personal danger she attended to the wounded sisters, and by her personal example inspired the sisters under her charge.

N./Sister LEONORA HERRINGTON, C.A.M.C.—For gallantry and devotion to duty during an enemy air raid. She remained at duty the entire night, and by her excellent example and personal courage was largely responsible for the maintenance of discipline and efficiency.

N./Sister LOTTIE URQUHART, C.A.M.C.—For gallantry and devotion to duty during an enemy air raid, when four bombs fell on her wards. Regardless of danger she attended to the wounded. Her courage and devotion were an inspiring example to all.

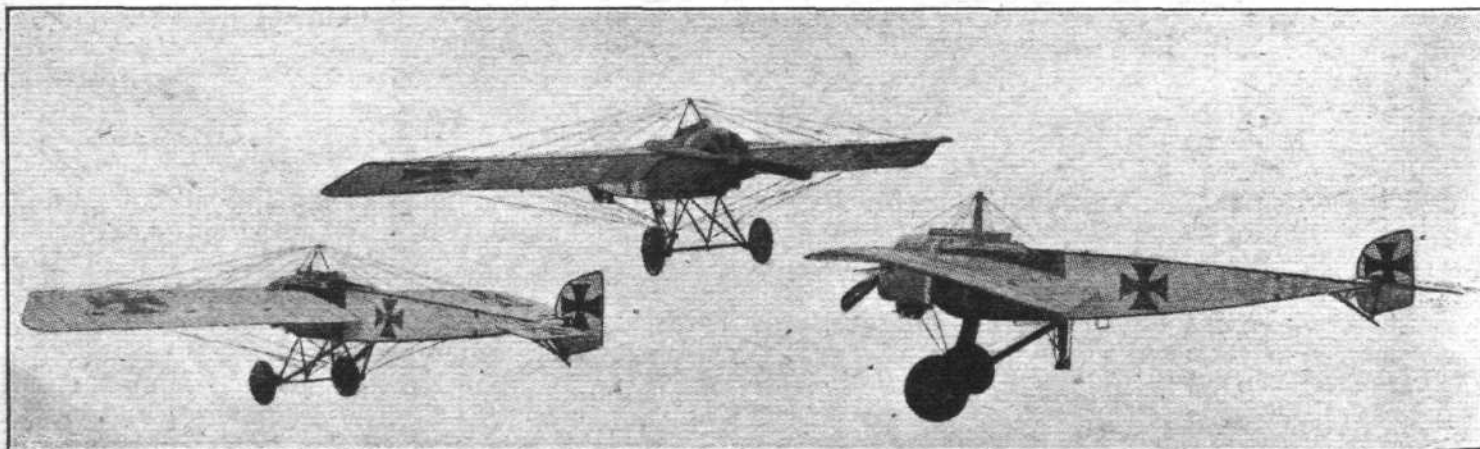
N./Sister JANET MARY WILLIAMSON, C.A.M.C.—For gallantry and devotion to duty during an enemy air raid. When in charge of a ward badly damaged, she displayed exceptional coolness, and, regardless of personal danger, sustained her patients and ensured their evacuation.

N./Sister META HODGE, C.A.M.C., N./Sister ELEANOR JEAN THOMPSON, C.A.M.C.—For gallantry and devotion to duty during an enemy air raid. Although injured by a falling beam, these sisters displayed great presence of mind in extinguishing overturned oil-stoves, and later rendered valuable assistance in the removal of patients.

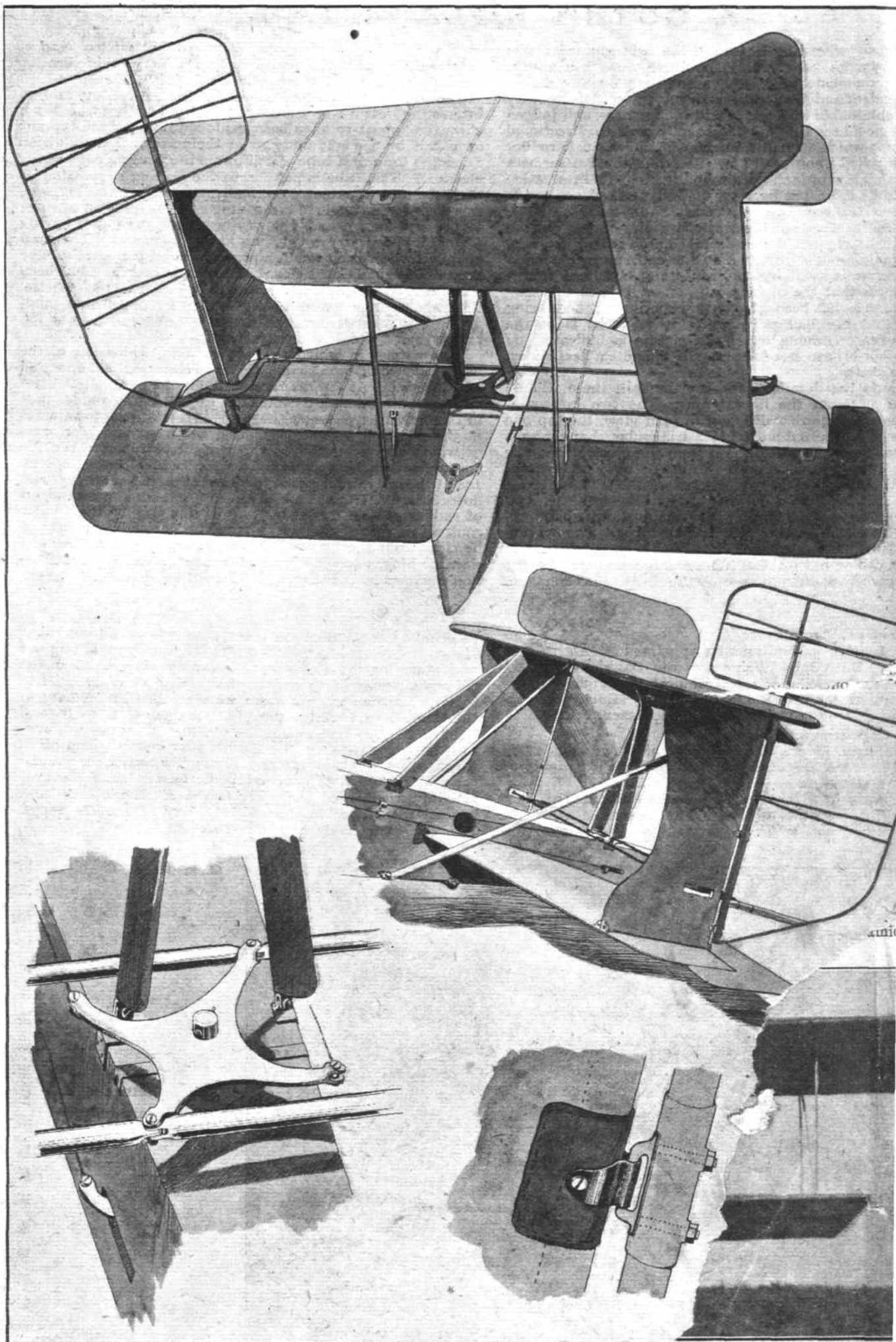
The Bombing of German Towns.

In his speech at the Guildhall on Monday, opening the Autumn War Savings Campaign, Mr. Bonar Law, Chancellor of the Exchequer, said :—"The unity of command, or rather the unity of military effort, is not confined to the Western front. There is one branch of that effort the effect of which I think is not fully realised, and about which I shall say a word. At a meeting in the Albert Hall, where the Prime Minister and I were present in support of these War Loans—it was just after a raid on London—I said then that we would never

have started the bombing of defenceless towns, but I said also : 'Our enemy has chosen to do it ; let him have a little patience, and we will give him back in full measure all that he has given to us.' That promise has been kept. This, remember, unfortunately is a war not only of armies, it is a war of peoples, and I am sure that the people of this country have not realised the effect which the action of an Independent Air Force has had upon the moral of the German people. I shall say nothing more on that head except this—that weapon is not ended.



Three views of a German Pfalz monoplane, from a recent German publication. This machine is, so far as one is able to ascertain, an exact copy of the pre-war French Morane. The machine has not, we believe, been built for several years.



A Gotha biplane tail. (For description see page *ne* Official Report.

THE FOKKER BIPLANE, TYPE D VII.

[From the Technical Department, Aircraft Production, Ministry of Munitions, we have just received an official report on the Fokker biplane. Except for extreme pressure on our columns the first instalment of our own description of this machine would have appeared in last week's issue of "FLIGHT," the greater part of the material for this article being made-up ready for publication. After carefully perusing the official report we have decided to adhere to our original intention of publishing our own description of this machine, preceded by certain items in the official report compiled from sources not available to the general Press. At the same time we feel obliged to point out certain discrepancies between the official report and our own. These occur mainly in the scale drawings of the machine. Thus in the side elevation the inter-plane struts are shown, in the official drawing, as approximately parallel, whereas as a matter of fact they are very far from being so. This mistake has apparently been caused by placing the front spar of the lower plane too far forward, bringing it into line with the chassis strut attachment, while, as a matter of fact, it is placed slightly farther aft in the recess in the body, as clearly indicated in "FLIGHT'S" side view, Fig. 1. In the same manner the rear spar of the bottom plane appears to have been placed too far aft. Turning our attention to the front elevation of the official general arrangement-drawing, it is found that the top wing is represented as having its top surface set at a negative dihedral and its lower surface at a positive dihedral angle. This does not tally with our own measurements, which show that the top surface of the top plane is perfectly straight, the lower surface sloping up to it. Again, the taper of the top spars is shown in the official drawing to extend right from centre line to tip. This is not correct. The top spars are parallel between the points of attachment of the struts sloping outward from the body, tapering from these points to the tip. This may appear only a small matter and one not worth drawing attention to. It should be remembered, however, that a change in the particular example referred to might, and in all probability would, considerably affect the stability and manoeuvrability of the machine, and the matter may not, therefore, be of as small consequence as might be imagined. In the official plan view of the Fokker there are one or two points which are not strictly accurate, such as showing the upper wing tip with a sharp corner at the leading edge instead of rounded off, and a straight leading edge instead of one slightly swept back. With this, however, we are not quarrelling, as the rounded corners would be of minor importance, and the sweep-back, as pointed out in our description, may be intentional, or, on the other hand, may have been caused by straining the wings badly. We have no desire to find fault merely for the sake of it, but when it comes to such a serious item as the off-setting of the vertical fin, which is shown in the official plan view as being on the centre line, while a matter of fact its front end is off-set to port, we do think this is inexcusable, especially as it is quite correctly pointed out in the text of the report that the biplane "has a triangular fin with its foremost point fixed an inch or two to the port side of the centre line of the machine," and a sketch, Fig. 12, has been drawn to illustrate this feature.]

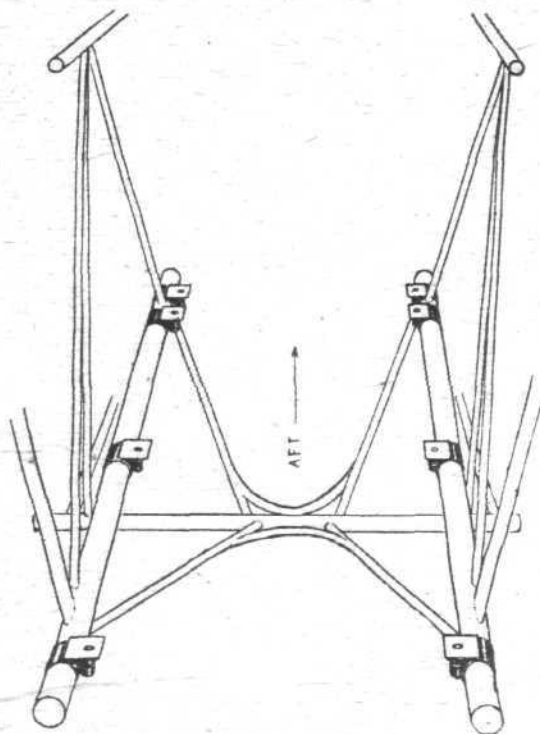


Fig. 15 of the Official Report on the Fokker biplane. Reproduced to show omission of important tubes in the framework. (Compare with "FLIGHT" sketches of same subject.)

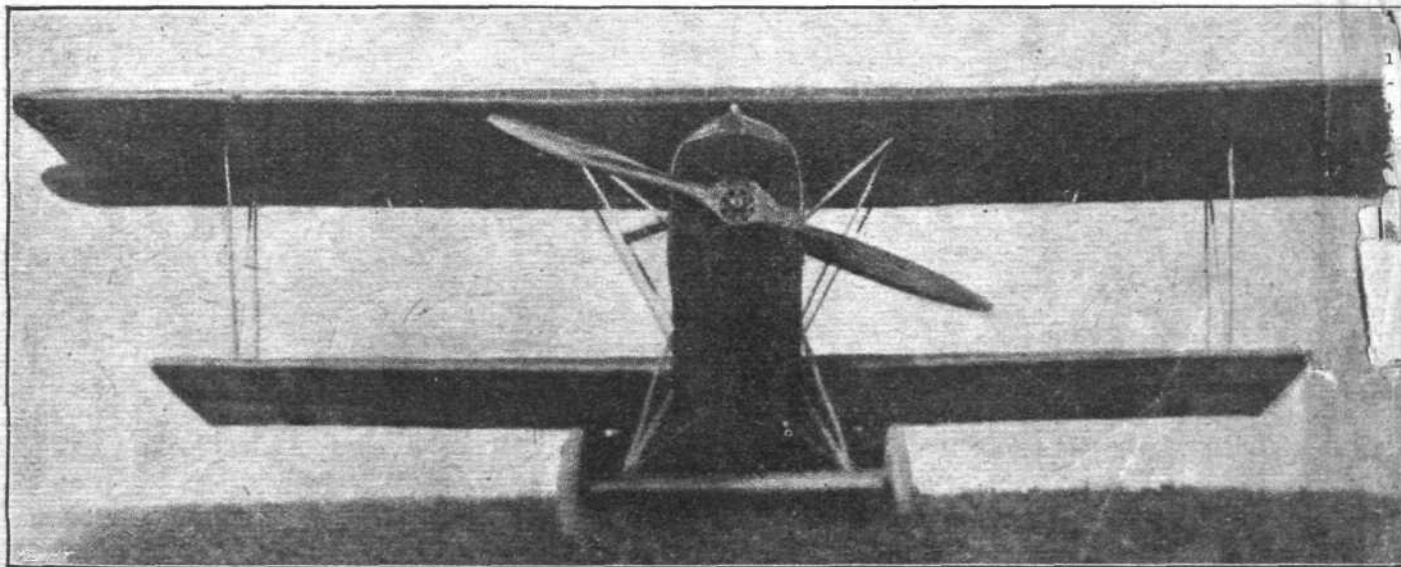
The text of the official report is quite accurate, as far as we have been able to judge, and the respective sketches are excellent with one exception. Fig. 15 in the official report is intended to show the engine bearers and their mounting. Whether it does so with any great success or not does not greatly matter to the argument, but what does matter is that important tubes forming part of the bearer and body structure have been omitted. In order to illustrate our point we are publishing the official sketch as well as our own (page 1114).—ED.]

THE following data, relating to the performance of this type of machine and the detailed particulars of the weights, which are reproduced from the official report, should be of considerable interest. It will be seen that these data have been compiled from various sources, some being obtained from the machine described, while others have been based upon figures relating to machines captured by the French:—

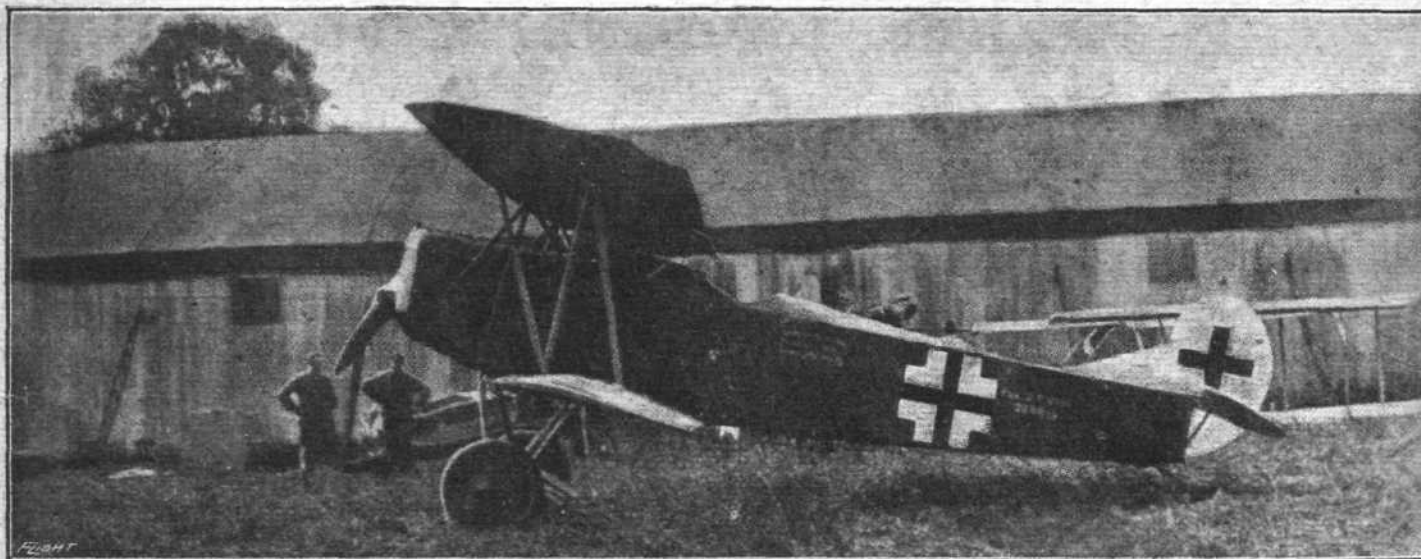
The British No. of the machine is G/2B/14, and the German No. is Type D7 F.N. 1,450; maker's No. 2,455.

It was brought down north of Hazebrouck on June 19, 1918, by a British S.E.5a, and is a single-seater fighter.

This aeroplane presents features of very great interest, whether viewed from the standpoint of aerodynamic design or



Front view of the Fokker biplane. Reproduced from the Official Report.



Side view of the Fokker biplane.

Reproduced from the Official Report.

or of actual construction. The machine which has been the subject of investigation was unfortunately rather extensively damaged, thus making absolute accuracy of description difficult, and trials of performance impossible.

A similar machine, however, has been tested for performance by the French authorities, who have issued the following report:—

Altitude.		Time of climb.		Speed at this height.
metres.	feet.	m.	s.	m.p.h.
1,000	3,281	4	15	116.6
2,000	6,562	8	18	114.1
3,000	9,843	13	49	109.7
4,000	13,124	22	48	103.5
5,000	16,405	38	5	94.9

The following data regarding weights is taken from a French source:—

Weight of fuselage, complete with engine, &c ..	1,322.2 lbs.
Weight of upper wing with ailerons ..	167.2 "
Weight of lower wing ..	99.0 "
Weight of fin and rudder ..	6.6 "
Weight of fixed tail plane ..	17.6 "
Weight of elevators ..	9.9 "
	<hr/> 1,622.5 "

[The schedule of principal weights given below is the result of weighing the actual components mentioned, which were taken from the aeroplane allotted G/2B/14]

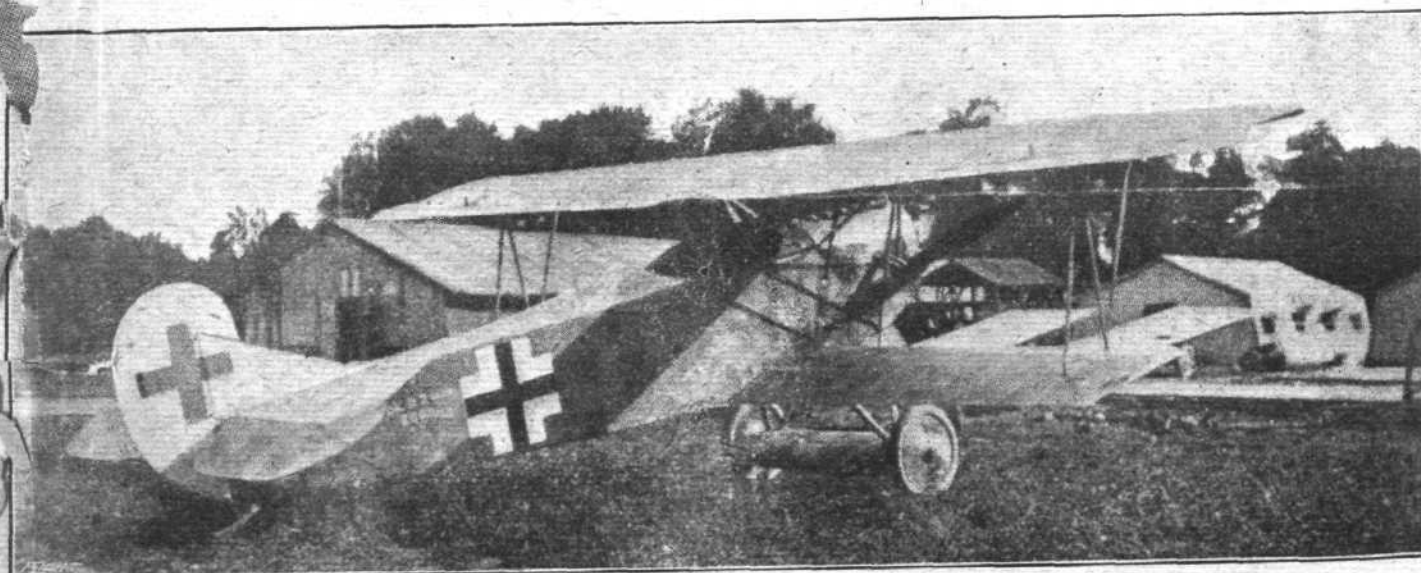
A different French report gives the following figures, which are taken from inscriptions found on one of the Spandau captured Fokker of the same type:—

Weight, empty ..	1,540 lbs.
Permissible load (useful load and fuel) ..	396 lbs.

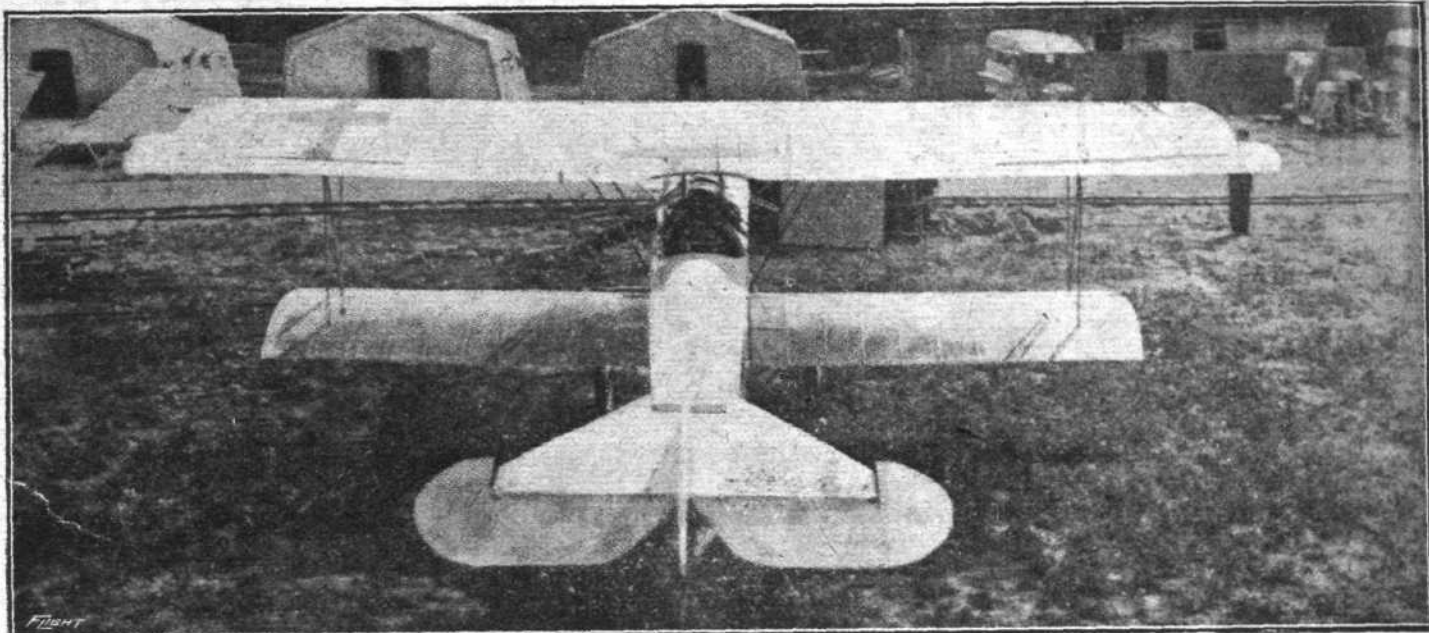
Schedule of Principal Weights.

	lbs.	oz.
Upper wing, complete with ailerons, pulleys, bracing wires, fabric and strut fittings ..	156	0
Lower wing (no ailerons fitted), complete with strut fittings and fabric ..	97	0
N strut between wings ..	6	9
Straight strut, between fuselage and trailing spar of upper wing ..	2	8
Aileron frame, with hinge clips, without fabric ..	4	8
Rudder frame, with hinge clips, without fabric ..	4	11
Fin frame, without fabric ..	1	14
Tail planes (complete in one piece), without fabric ..	12	6
Elevators (complete in one piece), without fabric ..	11	2
Radiator, empty ..	48	0
Undercarriage strut, each ..	2	10
Undercarriage axle, with shock absorber bobbins ..	18	2
Bobbin, each ..	0	7
Shock absorber, each ..	3	9
Undercarriage (complete), without wheels and tyres, and without plane, but including struts ..	29	4
Aluminium tube, forming rear spar of undercarriage plane ..	1	8
Wheel, without tyre and tube ..	11	8
Tyre and tube ..	9	4
Tail strut ..	1	15
Fabric, per square foot, with dope ..	0	1
Bottom plane compression rib ..	0	15
Bottom plane, ordinary rib ..	0	11
Top plane ordinary rib, at centre of plane ..	1	0
Bracket, with bolts, attaching top plane to fuselage struts ..	1	11
Main spar, top plane, including fillets for ribs, per foot run in centre ..	1	12

Owing to tapering ends the average weight per foot of the spars will be slightly less than this figure.



Three-quarter rear view of the Fokker biplane. Reproduced from the Official Report on this machine.



Rear view of the Fokker biplane. Reproduced from the Official Report.

Fabric and Dope.

The fabric is coarse flax, coarser and less highly calendered than the type usually met with, and a good deal heavier.

It is colour-printed in the usual irregular polygons. The bright red paint, mentioned below, is removable by alcohol, but not soluble in it, coming off as a skin under the treatment.

Under the paint is a dope layer—an acetyl cellulose. Neither paint nor dope presents unusual features.

[With these comments upon and extracts from the official report, we now commence our own description, in its original form, of the Fokker biplane.]

Weights—

Paint	92.0 gms. per sq. m.
Dope	68.1 "
Fabric	143.6 "

Strength	303.7 "
Extension	1,772 k/m.
	7.0 per cent.

Where the wings are not painted, the fabric is covered with a thin layer of dope only.

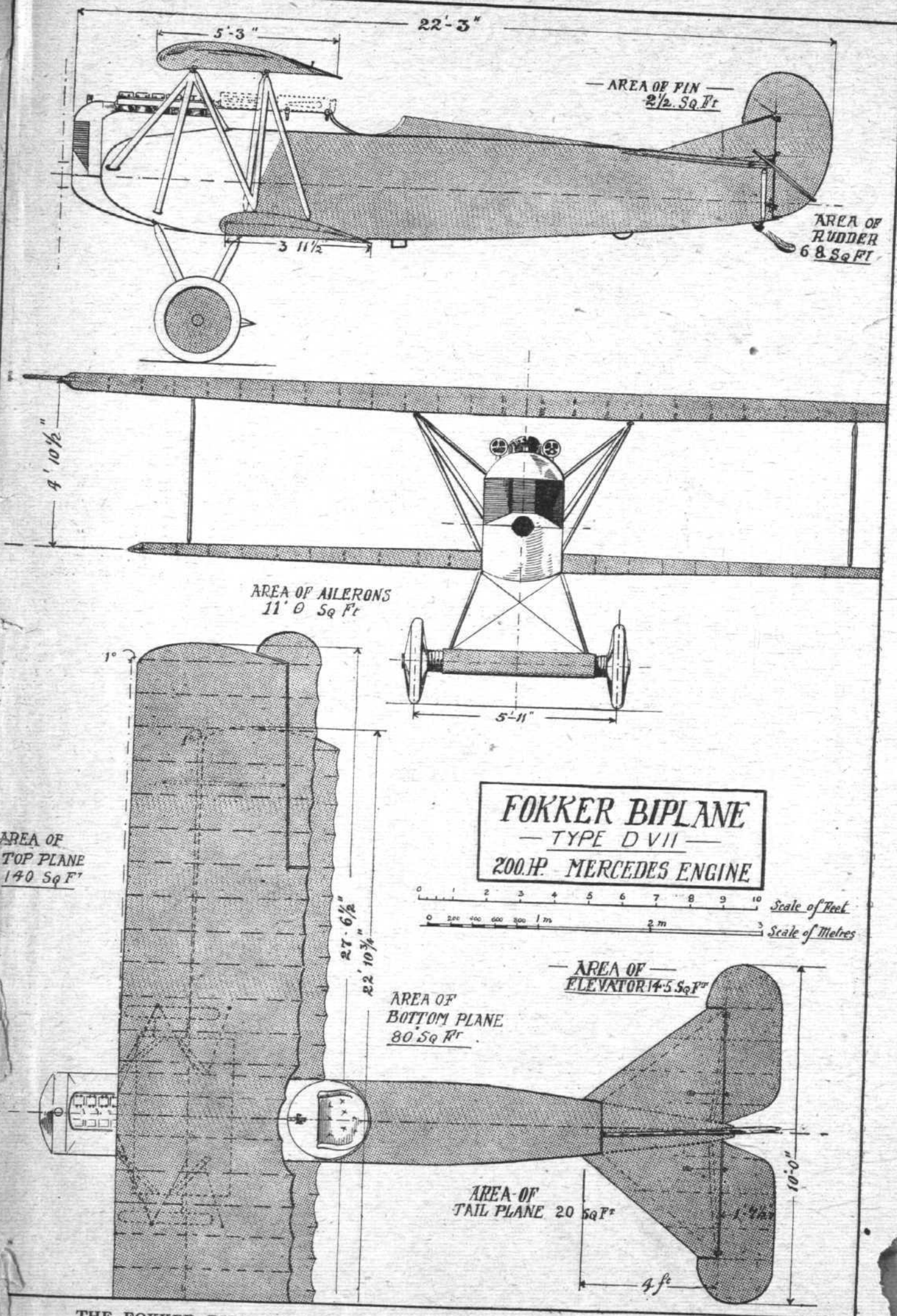
[Of the machines now on view at the Enemy Aircraft View Rooms, Agricultural Hall, Islington, few are of greater interest than the Fokker biplane, D VII. This is mainly due to the fact that this machine is of recent manufacture (the wings bear the stamp 24. IV. 18) and is at present employed in considerable numbers on the Western Front, but also on account of the unusual design of some of its more important component parts. In our issue of July 25th, 1918, we published a more or less diagrammatic perspective drawing of this machine, the set of wings then available for inspection being in a very damaged and incomplete condition. At the same time we gave a brief description of the main characteristics, which will, therefore, be familiar to readers of "FLIGHT." A complete set of main planes is now available, and by the courtesy of the authorities we have been permitted to inspect the machine and to prepare the following drawings, sketches, and description.—ED.]

As its class letters (D VII) indicate, the Fokker biplane is of the single-seater fighting type of machine. As distinct from all previous types of Fokker machines it is fitted with a large water-cooled engine, with the radiator mounted in the nose of the body. As regards its wings the Fokker biplane forms a compromise between the one-and-a-half-plane originated by the Nieuport firm and the ordinary single-strutter machine with both planes of the same span and chord. In the Fokker the upper plane is considerably greater in area than the lower, while the difference between the two is not quite so pronounced as in the Nieuport type. The single pair of interplane struts form the link of similarity to what we have termed the ordinary single strutter, inasmuch as they are not of the Nieuport Vee type, but follow general practice with the one exception that they are braced by a single diagonal tube instead of the more usual incidence wires.

From the general arrangement drawings it will be seen that the upper plane is mounted comparatively low in relation to the top of the fuselage, thus giving a fairly good view forward. Owing to the method of mounting the top plane there are no bracing wires running across the top of the body, interfering with the two machine guns, which are mounted above the body. As pointed out in our preliminary report on this machine, it is of the "wireless" type as regards its wing truss, no lift wires or landing wires being provided, although internal drift wires are fitted in the wings. This feature has been made possible by choosing an extremely deep wing section, very similar to that of the Fokker triplane described in our issue of May 30th, 1918, which gives ample room for a spar deep enough to take the wing loads without the external aid of lift wires. The construction of the wings will be dealt with in detail later, but at the present juncture a few words regarding the aerodynamic side of the question may not be amiss.

When describing the Fokker triplane we expressed a doubt as to whether all things considered, the deep wing section was "worth while." One has become accustomed to regard such a deeply cambered section as liable to have a high resistance factor, although its lift coefficient may be, and probably is, high. At the time we strongly urged that the N.P.L. should carry out wind tunnel tests on a model of the section to ascertain what, exactly, are its lift and drag coefficients and other characteristics. Up to the time of writing we have no information to the effect that such tests have been made. Nor are we prepared to express the opinion that tests would necessarily reveal any astonishing and unexpectedly good features. When, however, we see such a section employed in a machine of so recent manufacture as April of this year, we confess that we do think there is reason to suppose that the section cannot be so very inferior; otherwise why continue to employ it? Surely the scientific German mind would not tolerate its retention just to please a designer of a "freak" machine? One is therefore forced to the conclusion that the enemy has found that the wireless wing truss with the (possibly) larger resistance section has its advantages over low-resistance sections plus their wire bracing.

That the particular spheres of flying in which the section scores may be climbing and a high ceiling we should be the last to deny, but even so the enemy must, after weighing the cons and pros, have come to the result that these two attributes are of more importance than mere speed, if the latter is obtained at the cost of the former. Without the wind tunnel tests, or actual tests of a full size machine, one does not even know whether or not the Fokker biplane does have a comparatively low maximum speed. We would therefore again urge that tests be carried out in the wind tunnel, and that the results be made known to British manufacturers and designers.



THE FOKKER BIPLANE, TYPE D VII.—Plan, side and front elevations to scale.

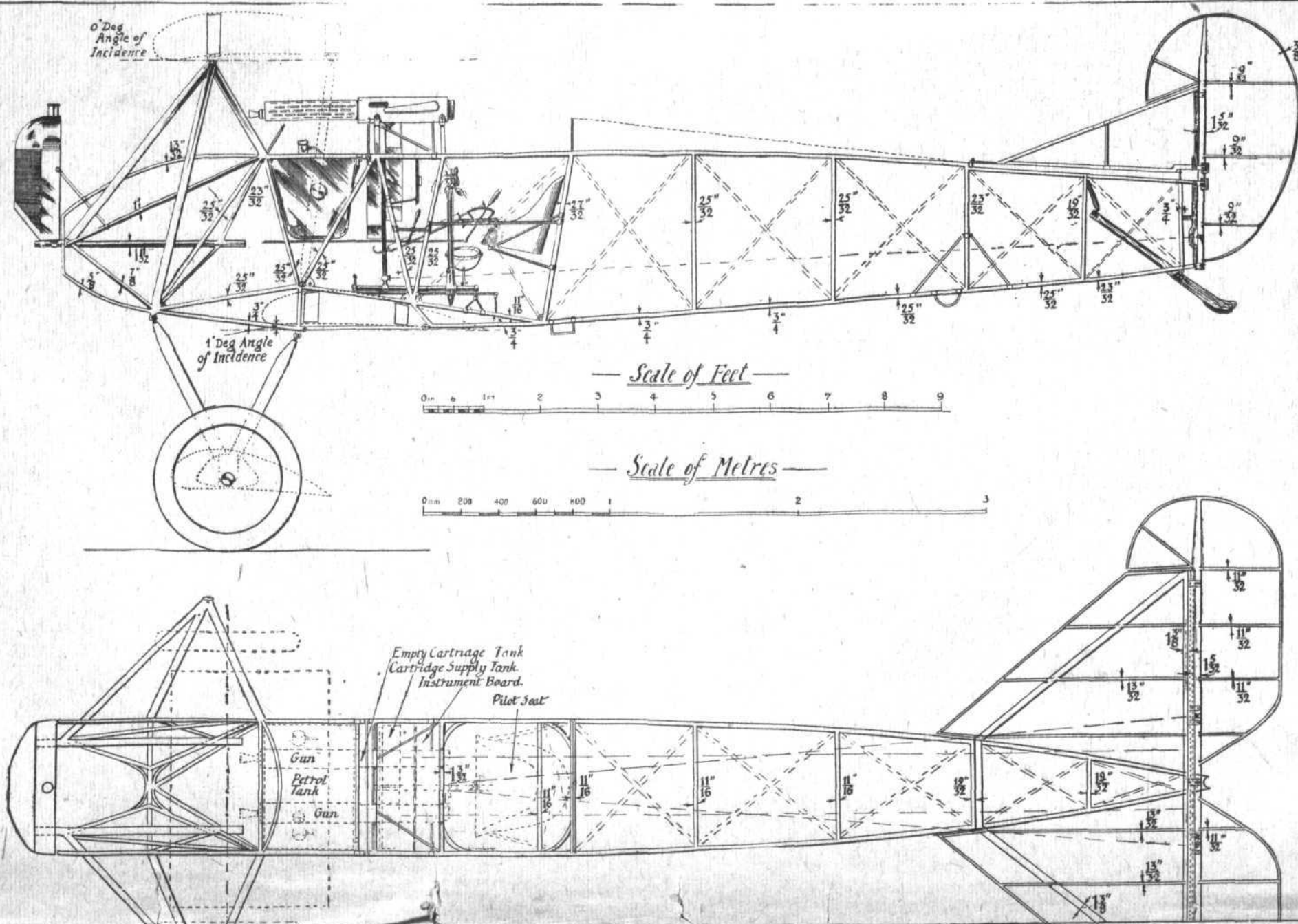


Fig. 1.—Side elevation and plan of the biplane. In the side elevation the tail plane has been omitted, and in the plan the rudder.

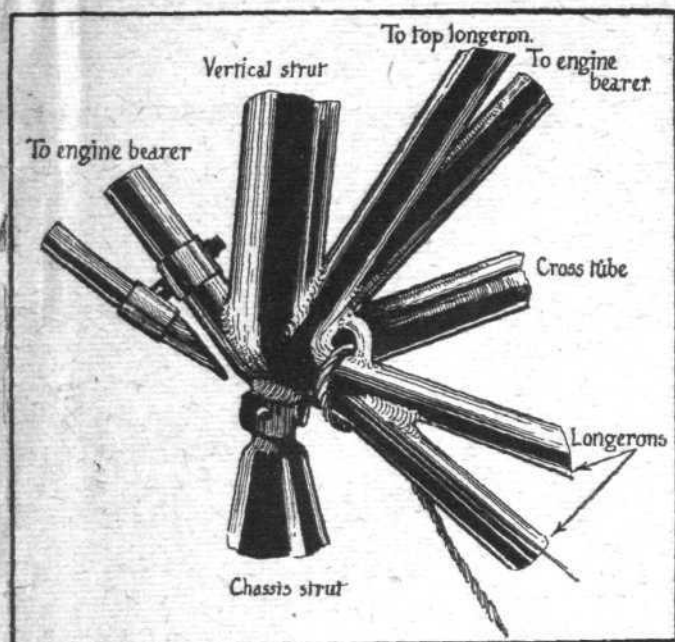


Fig. 2.—A good idea of the extent to which welding is carried in the body of the Fokker biplane can be formed from the accompanying sketch, which shows a joint, or rather a series of joints, where eight different parts meet and are welded together. Needless to say, the making of such a joint would call for the highest skill.

An examination of the plan view of the Fokker biplane will show that *ailerons* are fitted to the top plane only, and that even so are of an area which would appear to be wholly inadequate, as compared with those of machines of more orthodox design. Yet from what one can learn from pilots who have seen the actual machines at close quarters they appear to be very quick on the lateral control. Why is this? Again, one can only come to the conclusion that in some way the peculiar wing section must be responsible for the efficiency of the *ailerons*. Whether this be due to the deep section as such, or whether to the fact that the wings are very much tapered in thickness from root to tip is difficult to say. It appears probable that it may be in some measure due to both factors. The fact remains that sufficient lateral control is apparently provided by *ailerons* of ridiculously small area.

It has already been mentioned that the wing spars of the

Fokker biplane taper from root to tip. The form this taper takes will be to a certain extent apparent from the front elevation of the machine, but a more detailed reference to it may be of assistance. The upper wing spars, front as well as rear, have their top surfaces perfectly straight. The bottom surfaces are parallel to those of the top for a length extending between the points of attachment of the outward sloping body struts. From this point to the tip the lower surfaces of the spars slope upwards. The effect of this arrangement is to give the lower surface of the top plane a dihedral angle, the top surface being straight.

As regards the lower wing spars, their taper appears to be approximately symmetrical, that is to say, both surfaces of the spar are parallel for the short length resting inside the body, while from the side of the body to the wing tip the upper surface of the spar appears to slope down to about the same extent as the lower surface slopes up. In the machine under review both wings appear to have a sweep back of about one degree or so, but whether this was present originally or whether produced by excessive strain we have not been able to ascertain. The remaining component members of the machine do not present anything particularly unusual, and we can therefore now turn our attention to the:—

Construction.

Body.—As in the case of the triplane, the body of the Fokker biplane is built of steel tubing throughout. The general arrangement and most of the details will be clear from the side elevation and plan, Fig. 1. The four corner tubes or *longerons* vary considerably in section as one progresses from nose to stern. Their outside diameter at any point is indicated in the drawings, but we have not been able to ascertain the thickness of the tube walls, as this would have necessitated cutting a great number of rails and struts. Apparently the tubes are of very light gauge, and are joined, a larger to a smaller, at the points where occur the body struts. The struts are attached to the *longerons*, as in the triplane, by welding, the joint being particularly well made. As a matter of fact it is only this excellent workmanship that makes this construction feasible. Whether the welding has been done by the oxy-acetylene method, by oxygen and hydrogen, or by electricity is impossible to say. The construction points unmistakably to the body framework having been welded in place over jigs, and as one spoiled joint would ruin the whole framework it appears probable that a considerable amount of control of the temperature of the flame used would be an advantage. Possibly, therefore, the welding has been done by electricity. Whatever the method, there can be no doubt that the welding is excellently done, and, unless an entirely new method has been evolved by the enemy, could only have been entrusted to highly skilled workmen.

It is not only in joining the struts of the body to the

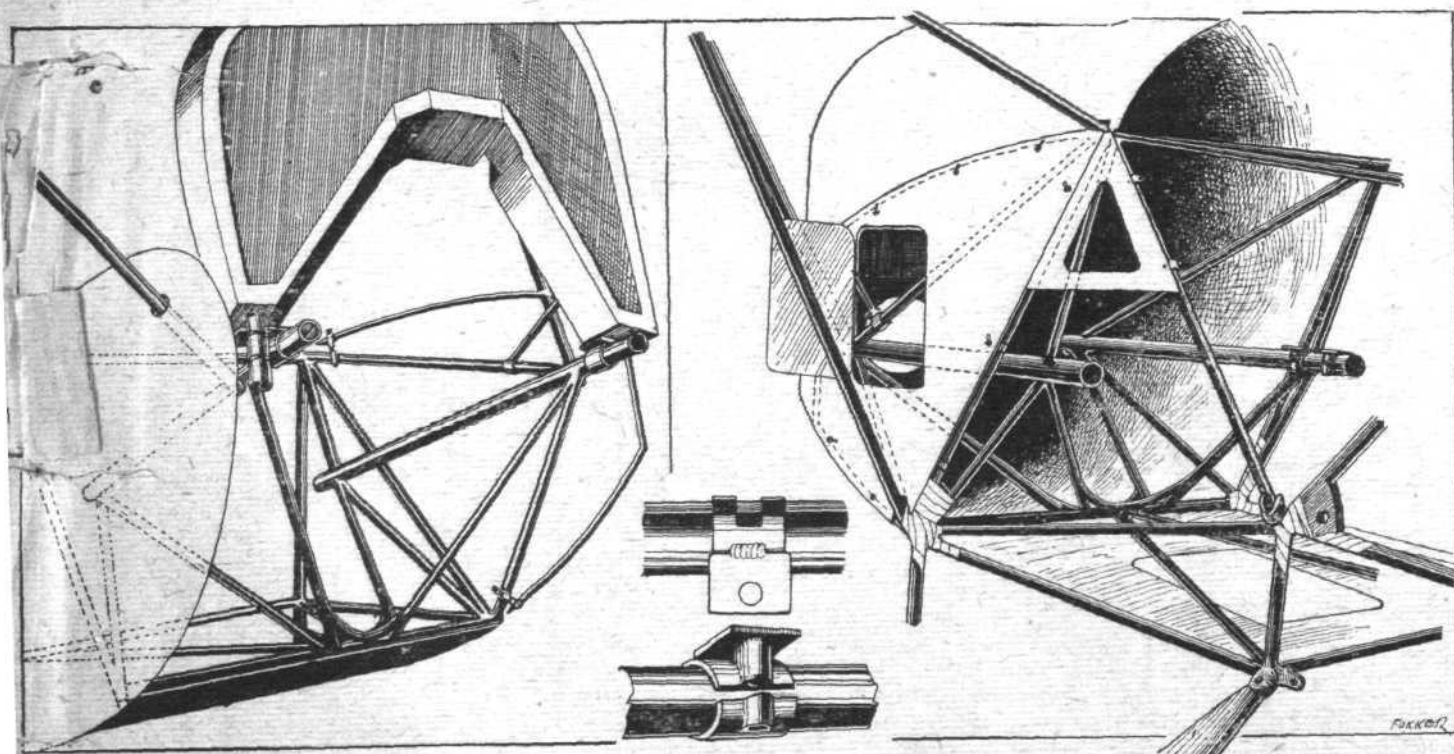


Fig. 3.—Two sketches showing, from different points of view, the engine bearers and their mounting in the Fokker biplane. The inset shows the split collars by means of which the engine is secured to the two longitudinal bearers.

longerons that welding has been employed, but also to a great extent for securing members which do not, strictly speaking, belong to the main body framework. For instance, the three stream line steel tube struts which connect the front spar of the top plane with the body are welded at their lower ends to various portions of the body frame. The front one of these struts is welded to the tubular engine bearer, while the other two are welded to the upper and lower *longerons* respectively. Thus when the wings are dismantled these struts remain in place on the body, a fact which would, one

imagines, render them liable to damage during transportation. In order to give an idea of the amount of skilful welding necessary in the Fokker body we show, in Fig. 2, a complexity of welds, all occurring at one joint. There are no less than seven members joined here by welding, not counting the socket for the front chassis strut, which might, as a matter of fact, have been included as it is attached to the *longeron* by welding.

In conformity with the rest of the design of the body of the Fokker biplane, the engine bearers and the framework

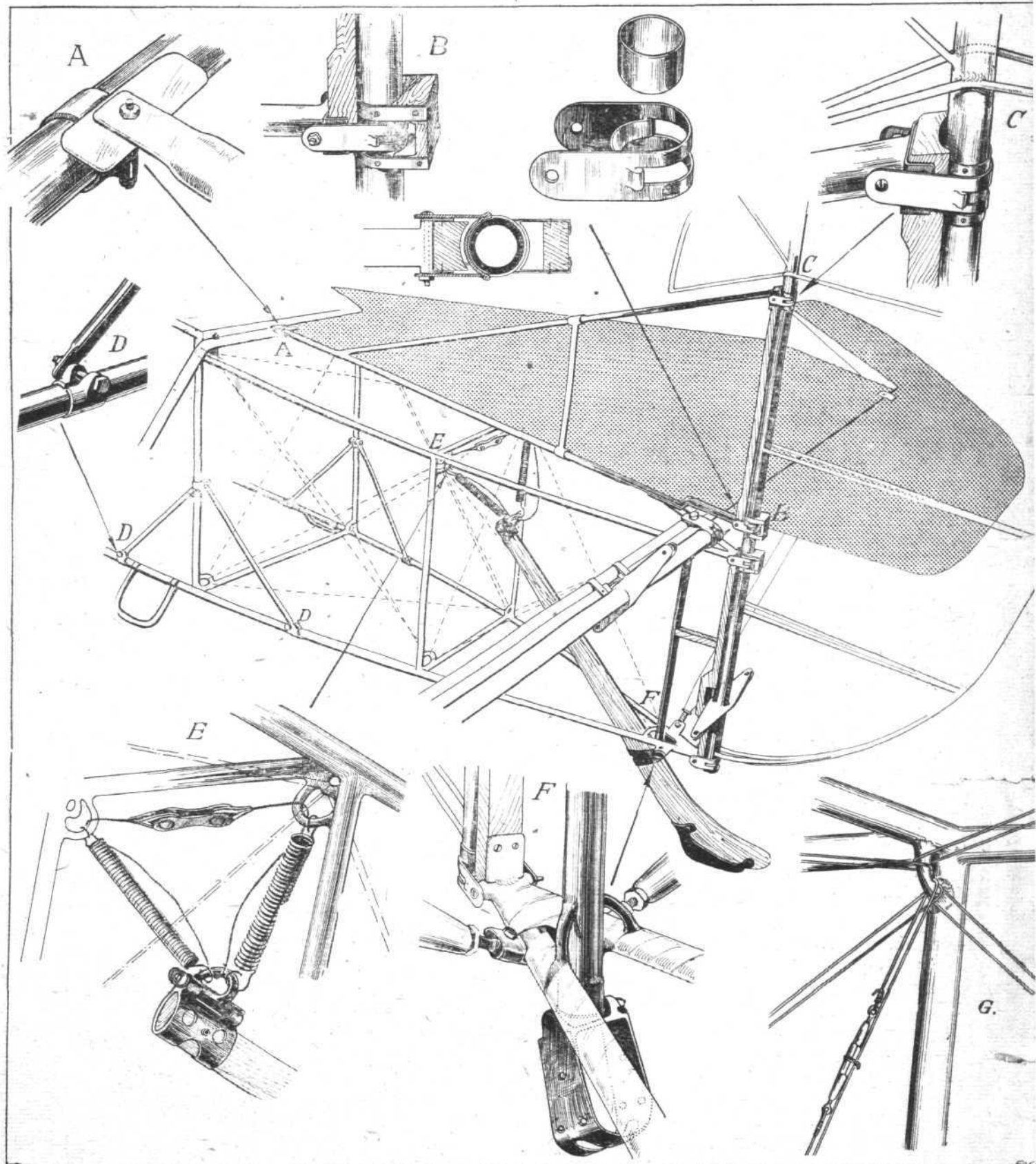


Fig. 4.—Some constructional details of the rear part of the body and of the elevator and rudder of the Fokker biplane. At A is shown the attachment of the vertical fin to the cross tube of the tail plane. At B and C are shown details of the hinges employed for rudder and elevator, and also for the ailerons. The sketch at D shows the split collar by means of which the diagonal tubes that reinforce the body at the point where occur the lifting handles are secured to the lower *longeron*. At E is shown the springing of the tail skid, and the cable limiting its travel, while at F is illustrated the tail skid attachment to the vertical body strut. The tubular quadrant and wiring of the body is shown at G.

connecting them with the fuselage, are in the form of steel tubes. Of these there are a considerable number, some plain, straight tubes and others bent to the shape of a letter U. The arrangement of these bearers and their supports is shown from two points of view in Fig. 3. The inset shows one of the split collars or slips by means of which the engine is secured to the two bearers.

Fig. 4 shows some constructional details of the body and tail planes of the Fokker biplane. The fixed tail plane as well as the divided elevator are built up of steel tubes, the general arrangement being shown in Fig. 1. In the general sketch of Fig. 4 the ribs of the tail plane have been omitted so as to show more clearly other details. Like the tail plane and elevator, the rudder and its fin are built of steel tubing. The fin has the peculiarity that its front end is slightly offset to port, probably to counteract a tendency, caused by the torque, to turn to the left. This offsetting of the fin would probably result in a tendency to turn to the right with the engine switched off, but with regard to this we have no data, as the machine has not been flown by any of our pilots, being in a too damaged condition to make this expedient. The attachment of the front end of the fin to the front transverse tube of the tail plane is shown at A, Fig. 4. The detail at B shows a hinge that is very extensively used on the Fokker biplane, both for the elevator and rudder, and also for the ailerons. The construction of the hinge will be easily understood from a reference to the sketches. A sheet aluminium plate has a portion stamped out as shown to form the front half of the bearing, the remaining two strips forming the rear half. Into the space thus formed is forced a bush that provides the bearing surface for the rudder or elevator tube. The whole hinge impresses one as being very neat and simple,

and the only objection that might be raised against its employment is that each hinge has to be pushed into place before the elevator or rudder ribs are welded to the tubular leading edge. As, however, everything is, apparently, done over jigs this is a matter that is easily managed while building up the control organs. The sketch at D shows the split collars used for securing the two diagonal tubes which reinforce the body frame at the point where occurs the handle by means of which the rear portion of the body is lifted when handling the machine on the ground.

The body of the Fokker biplane terminates at the rear in a sort of false stern post of wood, the last vertical tube of the body being placed some little distance farther forward. This tube, which is welded at its ends into the angle formed by the converging longerons at this point, has mounted on its upper end the attachment for the tail plane. This is in the form of a simple bolt, which does not appear to provide any adjustment for the angle of incidence of the tail plane, although it might easily be extended to do so. The front attachment of the tail plane to the top longerons is by means of two bolts passing through short lengths of tube welded to the inside of the longerons. At its lower end the vertical tube referred to above carries the attachment for the tail skid, the details of which are shown at F. The upper end of the tail skid is sprung by coil springs and the amount of travel is limited by a cable as shown at E. The sketch at G shows the tubular quadrant to which the bracing wires of the body are attached. As in the triplane these wires are simply doubled over the quadrant, and are thus not strictly speaking in duplicate. Only a single wire strainer is incorporated with each double wire, the method of locking the strainer being as shown in the sketch. (To be continued.)

THE ROYAL AERO CLUB OF THE U.K.

OFFICIAL NOTICES TO MEMBERS.

THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916).

Honorary Treasurer:

The Right Hon. LORD KINNAIRD.

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Brig.-Gen. W. W. WARNER, R.A.F. (Chairman).
Mr. CHESTER FOX.
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Lieut.-Col. T. O'B. HUBBARD, M.C., R.A.F.
Lieut.-Col. C. E. MAUDE, R.A.F.

Secretary:

Lieut.-Com. H. E. PERRIN, R.N.V.R.

Bankers:

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London, S.W. 1.

Objects:

The Lords Commissioners of the Admiralty and the Army Council having signified their approval, THE ROYAL AERO CLUB has instituted and is administering this Fund for the benefit of Officers, Non-Commissioned Officers and Men of the Royal Air Forces who are incapacitated on active service, and for the widows and dependants of those who are killed.

Subscriptions.

	£	s.	d.
Total subscriptions received to Sept. 24th, 1918	13,123	15	9
Miss D. Warder	2	2	0
Committee of the Senior Officers' Mess, Royal Air Force, Eastchurch	19	0	0
Collected at J. Samuel White and Co., Ltd., Works	0	11	9
Gross proceeds of a Concert held at the S.W. Area Flying Instructors' School, Royal Air Force, Gosport, on September 8th, 1918	24	2	9
Collection at the Parade Service for the R.A.F. Cadets belonging to the No. 2 School of Aeronautics, Oxford	7	5	7
Staff and Workers of Gwynnes, Ltd. (Seventy-first contribution)	8	11	8

Total, October 1st, 1918 13,185 9 6

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

Cheaper Aluminium Next Year.

THE Minister of Munitions announces that the control price of aluminium ingots of 98-99 per cent. purity will be reduced, as from January 1st, 1919, from £225 to £200 per ton, carriage paid to consumers' works. The price of remelted aluminium scrap and swarf ingots will remain as at present.

Gymnastic Adviser to the R.A.F.

LIEUT.-COL. H. C. MAYES, Director of the Canadian Army Gymnastic Staff, has been appointed adviser to the Air Ministry on the physical and athletic training of the Royal Air Force. Colonel Mayes is the author of a manual on bayonet fighting, which has been issued under the authority of the War Office.

Education at the R.A.E.

UNDER the Hampshire Educational Committee evening classes in chemistry, engineering, literature, shorthand, swimming and gymnastics are being started at nominal fees for employees at the Royal Aircraft Establishment, Farnborough.

Back from Germany.

In the party of British officers who arrived in Rotterdam on September 26th for repatriation was Lieut. R. A. Arnott, R.F.C. Lieut. W. Biheller, M.C., R.F.C., who was a prisoner in Germany, has now arrived in England.

Back from Bulgaria.

THE following officer, who was a prisoner in Bulgaria, has now arrived in England:—

Lieut. E. P. Hyde, Ches. R., attd. R.F.C.

Lord Lucas's Grave.

A BEDFORDSHIRE sergeant who has arrived home on leave reports having discovered on French soil the grave of the late Capt. the Right Hon. Lord Lucas, who was brought down while flying over the German lines in November, 1916. It is situated in a German military cemetery, at a spot between Baraste and Haplincourt, in the Cambrai sector, which has thrice changed hands since the first battle of the Somme. The grave is well kept, and bears a wooden cross, on which is a German inscription, the literal translation being, "Here rests he who, in an air battle on the 3rd November, 1916, was brought down. English Flight-Captain Lord Lucas."

THE TEMPERAMENT OF AVIATORS.

SOME very interesting conclusions are embodied in a report on "The Essential Characteristics of Successful and Unsuccessful Aviators, with Special Reference to Temperament," by Capt. T. S. Rippon, M.R.C.S., L.R.C.P. (Lond.), R.A.M.C., attached R.A.F., and Lieut. E. G. Manuel, R.A.F., which were published in the *Lancet* of September 28th. By the courtesy of the Editor we are able to give the following extracts:—

The enormous number of pilots who have qualified recently is a proof that the aviator is not a "super-man." It is true that we see certain men who perform marvellous "stunts," but when we come to talk to them and examine them with regard to physique and mentality we find that they are quite ordinary people.

Flying is not now confined to the public school boy, the cavalry officer, or the athlete. We take many of our pilots at present from the lower middle classes and some from the artisan class. The most useful method of discovering whether or not the candidate or pupil is likely to become successful is to study the life-history of the pilots whom we know to be efficient. This demonstrates the fact that there are many characteristics common to the successful pilot which are absent from the pupil who has been withdrawn from instruction in flying on account of lack of aptitude.

Sport.—The successful aviator has always the attributes of a sportsman. As a schoolboy he takes part in all forms of athletics and usually played for the school in one game at least. After leaving school he still keeps it up, and probably goes in for other kinds of sport—hunting, shooting, fishing, rowing, golfing, motoring, &c. He joins the Air Force because he is keen on flying, as it appeals to his sporting proclivities.

Character.—He possesses resolution, initiative, presence of mind, sense of humour, judgment; is alert, cheerful, optimistic, happy-go-lucky, generally a good fellow, and frequently lacking in imagination.

Age.—The majority of successful pilots are under 25 years of age, the explanation obviously being that the resiliency of youth enables them to accustom themselves more rapidly to a new occupation and to recover quickly from the strain and stress they are called upon to undergo.

High-spirited.—Any one who has lived with pilots for any length of time cannot fail to notice that they possess in a very high degree a fund of animal spirits and excessive vitality.

Amusements.—When they have finished flying for the day their favourite amusements are theatres, music (chiefly ragtime), cards and dancing, and it appears necessary for the well-being of the average pilot that he should indulge in a really riotous evening at least once or twice a month.

Alcohol.—Alcohol is taken freely by the older men, but the young, fit pilot, serving at home, hardly ever touches it. It is not necessary to legislate on the subject of alcohol for pilots; they are well aware of the danger of taking too much before flying. The desire for alcohol comes with "nerves," staleness and stress of service, but the fit pilot needs no stimulant. In so far that on active service it enables a man to sleep after an exciting day and promotes good fellowship in the mess, its effect may be said to be beneficial, but for the young cadet and the fit pilot on home stations it is entirely unnecessary.

Marriage.—The majority of successful pilots are unmarried, and our own observations tend to show that marriage is a definite handicap owing to the increased sense of responsibility. If a man marries after he has flown several hundred hours, and flying has become automatic, marriage may not apparently affect him for some time. In some cases it may even make him steadier and more careful, but sooner or later it will in most cases have a definitely deteriorating effect.

Although this objection could be advanced for any branch of the service, yet a careful consideration will show that there are special reasons why marriage is an exceptional disadvantage to the pupil under instruction. The training of officers for the infantry, for example, is practically unaccompanied by danger, and it is only when drafted overseas that they may be said to begin to know fear. By this time, however, they have learned all their duties, and the discipline acquired will help them to face their possibilities. The pupil under instruction in flying, on the other hand, whilst learning to fly in conjunction with his other training, faces great dangers, in some ways almost as great as he will ever be called upon to undergo. Being generally in England, he has not the feeling that he is in the actual zone of hostilities, and the risks he takes are, as one might say, undergone in cold blood.

The unmarried man (faced with the possibility of crashing whilst doing his first solo) in most cases dismisses the thought or takes the risk in the same way as a horse-rider puts his mount at a fence in strange country. The married man has the knowledge of what death may mean to his wife and family, and, moreover, has the opportunity in many cases of discussing it with his wife and manufacturing in his own home a condition of nervousness which eventually becomes so great that he confesses to his instructor that he has completely lost his nerve.

Occupation.—We found that the best type of pilot was seldom drawn from a sedentary occupation, that those who had lived a sheltered life were not so good as those who had roughed it, and we discovered the interesting fact that most of those pilots who before they joined were in business or doing clerical work possessed considerable sporting aptitude, and as soon as they had finished work would hurry to the cricket or football field.

Hands.—One of the most important characteristics we have noticed in successful aviators is "hands." This characteristic is difficult to define, but may be described as follows. The horse-rider with good hands is able to sense the mentality of a horse by the feel of the reins and also to convey his desires accurately to his mount. We have never known of a man who has consistently been the first flight in the hunting field making anything but a good pilot.

In the same way the pilot with good hands senses unconsciously the various movements of the aeroplane, and rectifies any unusual or abnormal evolutions almost before they occur. The skilful pilot appears to anticipate "bumps." He is invariably a graceful flyer, never unconsciously throws an undue strain on the machine, just as a good riding man will never make a horse's mouth bleed.

"Hands" appear to be congenital and cannot be acquired, although they may be improved and *vice versa*. Motor car and motor cycle racing, owing to the powerful grip that must be maintained to keep the machine on the track, tend to spoil "hands" even if this faculty was previously in existence. We have produced a mechanical contrivance for the purpose of demonstrating the difference between light and heavy-handed pilots with which we are at present experimenting and which we hope will prove of practical value.

The fighting scout.—The fighting scout is usually the enthusiastic youngster, keen on flying, full of what one might call the "joy of life," possessing an average intelligence, but knowing little or nothing of the details of his machine or engine; he has little or no imagination, no sense of responsibility, keen sense of humour, able to think and act quickly, and endowed to a high degree with the afore-mentioned quality, "hands." He very seldom takes his work seriously, but looks upon "Hun-strafting" as a great game.

Mechanical knowledge.—The question whether this type should possess a knowledge of mechanism, and of the whys and wherefores of flying, is a very debatable point. The authors, however, desire to express their definite conviction that the less the fighting scout pilot knows about his machine from a mechanical point of view the better. From the very nature of his work he must be prepared to throw the machine about, and at times subject it to such strains that did he realise how near he was to the breaking-point, his nerve would go very quickly. It has not been possible as yet to obtain a sufficient body of evidence in support of this statement, owing to the unwillingness of pilots to confess their ignorance of engines, for reasons of *amour-propre*. Some of the most experienced and prominent pilots of the present day, however, uphold our conviction.

The authors then go on to deal with the methods employed to obtain their data. They issued about 250 forms to flying men containing the following questions:—Age.—Number of hours flying. Whether in France with R.A.F. Types of machines flown.—Married or single.—What is the essential characteristic of a good pilot?—Is alcohol necessary for aviators?—What is your occupation in civil life?—What games and sports did you go in for? What was your special game? Do you ride a horse? Hunt? Motor?—What is your favourite (1) author; (2) poet; (3) amusement; (4) composer?—Is marriage a handicap to an aviator?—What are your views on the selection of candidates with regard to temperament? &c.

They received 47 back, and have arranged the answers in the form of a table. The authors have also circulated other questions among pilots with a view to eliciting information on such points as What is the essential characteristic of a good pilot? &c.

On the subject of the physical and psychological aspects of flying they state that the physical condition should always

be compared with the temperament of the individual, but the physical examination should always be preceded by the psychological. *Mens sana in corpore sano* is the ideal type, the healthy mind being the first essential qualification.

If we compare a first-class boxer with an aviator we notice certain similar characteristics. The essential attributes of a good boxer are courage, quickness, good muscular co-ordination, and ability to anticipate his opponent's intentions so as to deliver his own blow first. Powerful muscles and a large lung capacity are no indication whether a man is likely to be successful as a boxer unless he has the temperament as well.

The possession of a suitable temperament is the criterion of the individual's ability to fly; the possession of a suit-

able physique is the indication whether he can fly to great heights or whether he will stand the strains and stress of continuous flying. They then give some examples of unsuccessful candidates.

On the subject of marriage they show that at a school of instruction, from September 29th, 1917, to January 24th, 1918, the number of pupils was 369, of which 36 were married and 333 were single. Six of the former failed to qualify, being 17 per cent., while of the latter, although 13 failed, that was only 4 per cent.

They also give a table showing the time taken by 15 married and 15 single men to qualify, which shows that the total number of days under instruction was: Married, 936; single, 433, the average working out at 62.5 days for the married men, and 28.86 days for the single men.

THE ROLL OF HONOUR

(When an Officer is seconded from the Army, his unit is shown in brackets.)

Published September 24th.

Missing, believed Drowned.

Robinson, Lieut. R. W.

Missing.

Backhouse, Sec. Lieut. J. S. (Cam. H.).

Guthrie, Lieut. J. B.

Still, Sec. Lieut. G. (Cam. H.).

Thornton, Lieut. H. V. (A.C.C.).

Previously Missing, now reported Prisoners.

Gray, Sec. Lieut. R. H.

Irwin, Lieut. R. V.

Kelly, Sec. Lieut. R. (Rif. B.).

McConchie, Lieut. T. L.

Moore, Lieut. A.

Thomson, Sec. Lieut. H. E.

Townley, Lieut. D. C.

Whitehead, Sec. Lieut. H. R.

Missing, believed Prisoners.

Clark, Lieut. C. G.

Summers, Capt. J. K., M.C.

Interned.

Dear, Lieut. J. A.

Dodwell, Sec. Lieut. T. B.

Munro, Sec. Lieut. J.

Peters, Sec. Lieut. J. F.

Wynne-Eyton, Capt. R. M.

Published September 25th.

Killed.

Armstrong, Lieut. G. W.

Arnold, Lieut. J. V. (R. Welsh F.).

Boswood, Lieut. L. J.

Busby, P/P/O. D. A.

Garden, Sec. Lieut. K. C. W.

Holmes, Lieut. J. C.

Kidmarsh, Lieut. J. M. (D. of Well.)

Mahoney, Sec. Lieut. B. G.

Died of Wounds.

McNeil, Lieut. A. G.

Missing, believed Killed.

Franklin, Lieut. L. N.

Wounded.

Warner, Lieut. G. L. (Queb.)

Previously Missing, now reported Wounded and Prisoners.

Daltrey, Sec. Lieut. F.

Musgrove, Sec. Lieut. H. S.

Previously Missing, now reported believed Wounded and Prisoner.

Connolly, Sec. Lieut. S. M.

Previously Missing, now reported Prisoners.

Bartlett, Lieut. A. F.

Gray, Sec. Lieut. G. M.

Hacklett, Lieut. L. A.

Peckham, Lieut. C. W.

Vick, Sec. Lieut. H.

Previously Missing, now reported believed Prisoner.

Gordon, Sec. Lieut. C. A. (York and Lanc.).

Published September 26th.

Killed.

Buck, Capt. G. S., D.F.C., M.C.

Coleman, Sec. Lieut. L.

Davies, Capt. I. G.

Davies, Sec. Lieut. N.

Halliday, Sec. J. G. W.

O'Flynn, Sec. Lieut. G. B.

Parker, Sec. Lieut. H.

Died of Wounds.

Cumming, Lieut. H. W. M.

Kirby, Sec. Lieut. C. F.

Previously reported Wounded, now reported Died of Wounds.

Keen, Major A. W., M.C.

Accidentally Killed.

Macpherson, Lieut. C. S. (Nova.Sc.).

Cadet Accidentally Killed.

Watts, C. F. (Aus. F.C.).

Wounded.

Ball, Lieut. B. B.

Brown, Sec. Lieut. G. A.

Brown, Sec. Lieut. M. E.

Fox, Lieut. F. W.

Garlake, Sec. Lieut. J. C.

Hunter, Lieut. L. J.

Mercer, Lieut. P. E.

Notley, Lieut. H. S.

Schofield, Sec. Lieut. G. C. (Leic.)

Taylor, Sec. Lieut. A.

Missing.

Bridgett, Sec. Lieut. C.

Cole, Lieut. H. A.

Crosby, Sec. Lieut. E. E.

Gage, Sec. Lieut. C. R.

Lloyde, Lieut. J. P.

Wogan-Browne, Sec. Lieut. C. P.

Published September 27th.

Killed.

Boyce, Lieut. E. F.

Nelson, Lieut. H. L.

Parfitt, 2nd Lieut. F. A. (York and L.).

Possolo, Lieut. E. S.

Sutherland, 2nd Lieut. H. A.

Tedbury, Sec. Lieut. R. N.

Towler, Sec. Lieut. C. J. (R.W. Kent).

Wocllard, Lieut. G. F. (D. of Well.).

Previously Missing, now reported Missing, believed Killed.

Belgrave, Capt. J. D., M.C. (Oxf. and Bucks. L.I.).

Boothman, Sec. Lieut. C. D.

Cutmore, Lieut. W. C.

Dickinson, Lieut. H. M.

Duncan, Sec. Lieut. W. G.

Forsyth, Capt. W. A. (R.F.A.).

Fyfe, Sec. Lieut. R. J.

Golier, Sec. Lieut. J. M.

Hirst, Sec. Lieut. S.

Hughes, Lieut. J. M. (S. Lan.).

Learn, Lieut. G. A.

Robertson, Lieut. W. S.

Sieveling, Capt. V. E., D.S.O.

Stubbs, Lieut. W. H.

Wild, Sec. Lieut. H.

Drowned.

Smith, Sec. Lieut. F. F.

Wounded.

Moore, Lieut. W. P. (Aus. F.C.).

Previously Missing now reported Prisoners.

Kemp, Lieut. F.

Lewis, Sec. Lieut. R. G.

Interned.

Lloyd, Lieut. A. C.

Wilson, Sec. Lieut. M. G.

Correction:

Accidentally Killed.

Dunn, Lieut. R., Aust. F.C., should read Dunn, Sec. Lieut. R., Aust. F.C.

Published September 28th.

Killed.

O'Connor Glynn, Lt. E. P.

Talbot, Sec. Lt. R. F.

Wilson, Sec. Lt. H. H.

Died.

Previously Missing, now reported Killed.

Burdick, Capt. F. W. (Lond. T.F.).

Dawson, Lt. W.

Previously Missing, now reported Died of Wounds.

Levick, Sec. Lt. C.

Wounded.

Barker, Sec. Lt. F.

Bates, Sec. Lt. F. F.

Dennis, Sec. Lt. J. G.

Greer, Sec. Lt. T. E.

Jackson, Sec. Lt. W. E.

Knight, Lt. G. H.

Levy, Lt. B. A.

Matthews, Lt. A. H.

Potter, Lt. L.

Ramsey, Sec. Lt. H. G.

Rowley, Sec. Lt. S. E.

Vascoe, Lt. F.

Whitaker, Sec. Lt. R. J.

Missing.

Bellord, Sec. Lt. C. E.

Chalkin, Sec. Lt. W. J. N.

Davies, Sec. Lt. H.

Guild, Sec. Lt. C.

Harrison, Sec. Lt. A. G.

Heine, Lt. R. W.

McKenzie, Sec. Lt. A. D.

Marchant, Lt. E. A. (Lond.).

Ogilvy, Lt. W. F.

Richardson, Sec. Lt. J. B.

Shipton, Sec. Lt. G. A.

Tapping, Sec. Lt. A.

Published September 30th.

Killed.

Appley, Sec. Lt. C. W.

Barnet, Sec. Lt. W. R.

Cope, Capt. W. G. (Yorks).

Elworthy, Sec. Lt. S. R.

Hill, Lt. H. B.

Previously Missing, now reported Killed.

Amos, Sec. Lt. J.

Borrowman, Sec. Lt. J. J.

Glasse, Lt. E. S.

McElroy, Lt. V. H. (Can. Eng.)

Previously Missing, now reported Died of Wounds.

Locke, Sec. Lieut. E. G.

Previously reported Wounded and Prisoner, now reported Died of Wounds as Prisoner in German hands.

Chant, Lt. E. M. (Brit. Col.).

Wounded.

Alvord, Sec. Lt. C. H.

Kibby, Sec. Lt. H. C.

Marshall, Sec. Lt. R. M.

Osman, Lt. F. L.

Reilly, Sec. Lt. W.

Shaw, Sec. Lt. B.

Thompson, Lt. C. R.

Missing.

Dilloway, Sec. Lt. R. H.

Evans, Sec. Lt. W. D.

Johns, Sec. Lt. W. E.

Lipsett, Sec. Lt. R. S.

McDonald, Lt. J.

Reid, Sec. Lt. J. E.

Rose, Sec. Lt. R. H.

Russell, Sec. Lt. C. G.

Saunders, Lt. H. C., M.M. (Brit. Col.).

Smith, Sec. Lt. H. S.

Stockman, Lt. E. J.

Wounded.

Sec. Lt. F. D. Kilby (R. War.), should read Sec. Lt. F. G. Kilby (R. War.)

Lt. F. Vascoe, should read Lt. F. Pascoe.

Published October 1st.

Killed.

McKil, Sec. Lieut. R.

Misenheimer, Sec. Lieut. W. K.

Nichols, P/F/OD. M.

Rose, Sec. Lieut. A.

Sanders, Sec. Lieut. R. H.

Thompson, Sec. Lieut. C. F. J.

Previously Missing, now reported Killed.

Edwards, Lieut. C. G.

Pim, Lieut. T. (R.F.A.).

Died.

Jennings, Lieut. F. R.

Wounded.

Baker, Sec. Lieut. A. A.

Bright, Lieut. J. M.

Cooper, Lieut. H.

Davis, Sec. Lieut. L. S. (R.F.A.).

Irwin, Capt. W. R.

Jones, Capt. R. T. (E. Kent R.).

Linforth, Lieut. C.

Missing.

Amey, Sec. Lieut. A. E.

Anderson, Lieut. G. F.

Baddeley, Sec. Lieut. E. L.

Bowen, Lieut. L. G.

Broadley, Lieut. T. H.

Campbell, Sec. Lieut. A. B. D.

Finch, Sec. Lieut. F. E.

Holleran, Capt. O. C.

Johnston, Sec. Lieut. W. A.

Payne, Sec. Lieut. P.

AIRISMS FROM THE FOUR WINDS

THE leader-writer of an American rural sheet, the *Rochester Post-Express*, which describes itself coyly as a "fearless and able newspaper," is not at all averse to rushing in where angels fear to tread. He states confidently that it is "possible to build 'planes capable of 250 miles an hour. All that is required is to flatten out the curves of the wings. What we shall see in time are machines with their centres of gravity hung in such a manner below their wings that plunging falls will be impossible, and if the motor failed the machine would parachute to earth." Needless to "throw a perfume on the violet" by commenting on this gem, but only think of the centre of gravity neatly festooned under the wings, after the manner of a bomb, ready to expand and save the life of the "intrepid aviator."

HAVING remembrance of the wonderful entertainments provided for the employees in Kent of Messrs. Vickers, Ltd., at the Princesses' Theatre, Crayford, which was erected by the firm for the munitioners and inaugurated in July, 1916, we are not very surprised that the workers down there are petitioning the company for the completion of the reconstruction of this theatre, which, it will be remembered, was partially destroyed by fire in December of the same year in which it was first opened. Since then those responsible for its carrying on have endeavoured to maintain the entertainments for the workpeople and their families in a tent alongside the theatre site. A pretty severe handicap which winter hardly helps to make easier. It is a case for the Ministry to help to completion, by giving permission for the building to proceed. There is ample excuse to grant this, as the Crayford district, where these workers are toiling to help along the war, is hardly a part of Kent overflowing with places of amusement or recreation. In fact the position is severely isolated, so the sooner the hall can be got going again, the better for all concerned. There's no profiteering in this undertaking. It's a case of Messrs. Vickers, Ltd., seeing the thing through. And some of the programmes which were provided during the theatre's short existence would have done credit to many West-end halls of entertainment.

LIKE father, like son. From New York comes a note that Ugo d'Annunzio, son of the poet and airman, Gabriel d'Annunzio, has over there piloted a Caproni machine with twelve passengers on board.

Now the Air Board "spread" is being connected up with those remarkable Adam Street buildings and the Royal Society of Arts houses in the adjacent thoroughfare—Adelphi Buildings. It is without doubt a difficult problem, finding suitable accommodation for the ever-growing needs of the Air Ministry, and perhaps the outcry against annexation would not be so acute, when the scout of the Air Board hovers around possible buildings, were it not for the allegation that the interiors are treated to the utmost lengths of ruthlessness akin to that of the original Hun motto "spurlos versenkt."

Hence the wail from County Hall, Spring Gardens, of Mr. Montague Shearman, Jun., who writes as a member of the London County Council and an occupier of the premises concerned in protest against "the proposed commandeering of a number of valuable 18th-century houses in Adam Street by the Air Board. These houses," Mr. Shearman continues, "all of which preserve almost intact the original ceilings, wall decorations, and mantelpieces designed by the Brothers Adam, are to be converted into dormitories for the personnel of the Air Board Staff at the Hotel Cecil. It is said that structural alterations are contemplated providing for the demolition of a portion of the back of the premises to give direct access to the Hotel Cecil. Is it really necessary for the prosecution of the war to expose unique examples of the decorative art of the period to the possibility of irreparable damage? Were the premises needed for office accommodation my protest would be directed solely against the extravagance involved in commandeering houses at some £600 per annum each to be paid by the public. But here Sir Alfred Mond seeks a unique opportunity to combine extravagance with sheer vandalism."

UPON the top of this comes another protest from Sir H. Trueman Wood, for so many years the Secretary of the Royal Society of Arts, who accuses the Air Board of contemplating the inclusion of the historic houses of the Royal



"The enemy bombards our front not only with a drumfire of artillery but with a drumfire of printed paper." Thus Marshal von Hindenburg describes the leaflets scattered over the German lines as well as over French and Belgian invaded territory from Allied balloons. In a windy manifesto the German Army and the German nation are warned against aerial truth. Inflating with hydrogen gas some of the balloons sent over the German lines and French and Belgian invaded territory from the British Western Front.

Ministry of
Informal

Society of Arts in its requisition of buildings. Sir Henry hopes this publicity may bring forth a contradiction of the rumour, and in the meantime he makes assertion that "of all the unsuitable buildings in London for billeting purposes, the Society's house must be among the most unsuitable. As Adam built it, it consisted—and indeed it now consists—of two houses, a larger and a smaller. The larger house consists of the Meeting Room (two storeys high), a basement, and some attics. The smaller one has three storeys, with two rooms on each, and some attics." As Sir Henry spent 40 years in the building he claims to know its inconveniences, and concludes by pointing out that "it is one of the best examples of Adam's work in London, and if, with all its historical associations, it is to be destroyed, at least some better excuse should be found for such a piece of vandalism than the need for bedding-out the employees of a Government Department in convenient proximity to their office."

THE trouble, of course, is that wheresoever the Air Board seeks to pitch its tent, objections are bound to crop up. It is a case of some unbiassed mind of real sound and experienced judgment bringing to bear a sense of proportion in deciding upon the course to follow. It is neither just nor business to leave these matters to the haphazard methods of minor officials, as, unfortunately, is too often the case.

ANYONE who thinks they have had in the past a grievance against the aviation authorities of this little island should be able to clean their palette by a perusal of the Report recently published, upon the United States Air "Program" as investigated by a Special Commission of Enquiry.

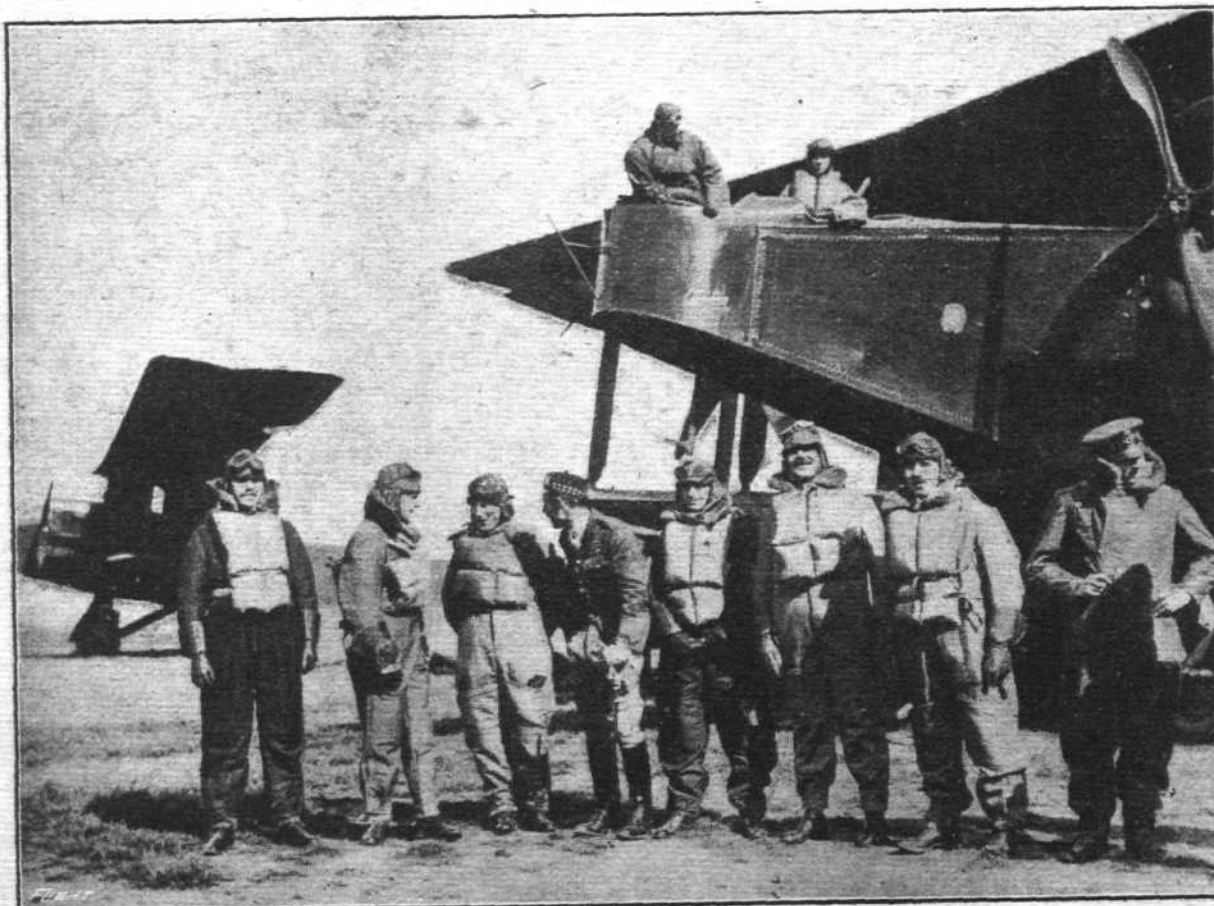
WONDER if all the stories of the how and the why of the thousands of mishaps of "missing" R.A.F. machines will ever come to be told in the days after the war. What a truly Wonder Book they would make if assembled between two covers. Hardly a day passes but we have to reply to enquiries from relatives near and distant, for missing pilots, and very curious at times are the facts which result. By way of a recent item, an R.A.F. sergeant—Gordon Vredenburg—was reported officially as "missing." His father quickly invoked the aid of "FLIGHT" for any news of the lost one. As in so many other cases, with the information placed at our disposal, our enquiries soon resulted in ascertaining that young Vredenburg was safe and unwounded in Germany, about the same time that his father received the same cheering news of his son from another source. The following facts of this particular case are sufficiently interest-

ing, by way of example, to recapitulate, especially as emphasising the value of an observer having practical knowledge of flying against emergency. The "missing" observer was one of a bombing squadron returning at 16,000 feet, when his pilot was hit, and the machine fell 14,000 feet out of control. It was then righted, and was seen to disappear in the mist in the German lines. Subsequently a message was dropped by a German airman saying that the pilot (Sec. Lieut. Hugh Tussaud) and the observer (Sergt. L. G. Vredenburg) were prisoners of war; the pilot slightly wounded and the observer unwounded. Naturally Mr. Vredenburg, senior, upon getting this information, lost no time in passing it on to the pilot's father, J. Theodore Tussaud, of waxwork fame, offering his congratulations to him upon having so clever a son to effect a safe landing after such a drop. But here again came a fresh surprise.

A LETTER in the meantime from Lieut. Tussaud from Germany had been received from his father, setting out that "I was shot through the hindquarters, but no damage of a serious nature done. My observer was good enough to land me because I was unconscious, and he did it in a ditch upside down," it therefrom emerging that, after all, the credit of saving an annihilating crash fell to young Vredenburg's pluck and presence of mind; perhaps not very surprising having regard to his family's record in this war.

His eldest brother, Lieut. E. Vredenburg, joined the R.F.C. in August, 1914, as a mechanic, and received his commission about two years ago. He has done good service in France over the enemy lines. His second brother, Capt. V. Vredenburg, joined the Queen's Westminsters at the outbreak of the war, and was given a commission in the Duke of Wellington's shortly afterwards. He fought in France, Gallipoli and Mesopotamia, where he was wounded. Then back to France, where he won the Military Cross for exceptional gallantry. His third brother, Charles Vredenburg, enlisted in the 12th London Regt. (the Rangers) in 1914, and was killed in action at the second battle of Ypres. His fourth brother is himself. His fifth brother, Douglas Vredenburg, joined up as soon as his age permitted, and has just been wounded while serving with the 10th Royal Fusiliers in France.

By way of a climax, it has to be recorded that the father of these boys, Capt. Edric Vredenburg, volunteered on August 4th, 1914, and was given a commission in October of that year, in the 10th London Regt., and as a result has been seriously injured while on duty in this country.

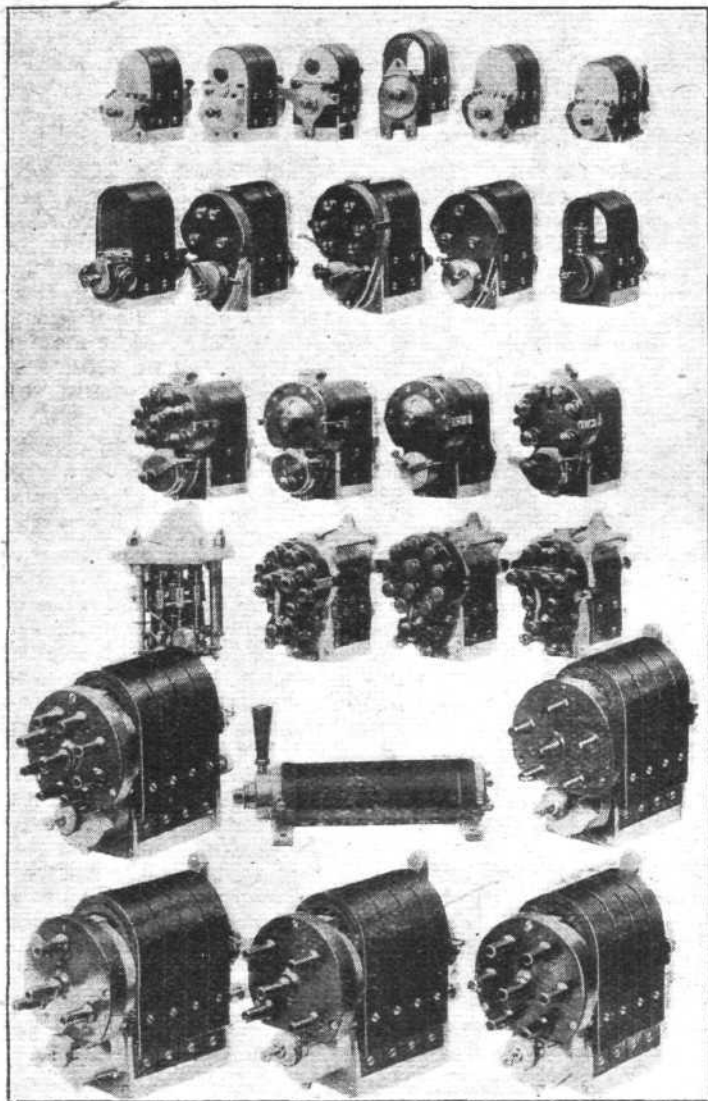


Even journalists are now allowed officially to fly the Channel upon occasion, just for the experience of the thing on their way to the fighting front. Here is such a "freight" for an "H.P." in flying kit, ready for their journey.

Ministry of Information.

B.L.I.C. AIMS AND METHODS.

"WONDERFUL" and "extraordinary" were two words which were hard worked on Friday of last week, when, at the invitation of Mr. B. L. P. Caillard, a party of journalists



A selection of all-British built magnetos made by the B.L.I. Co.

were shown round the factory of the British Lighting and Ignition Co., whose products are fast becoming well known by the *marque* B.L.I.C. Wherever the visitors went they saw evidences of the thorough way in which the firm have laid themselves out to beat the Hun and how completely they have succeeded. Whether it was in jig-making, in lathe-work, in moulding of insulated parts, in winding coils, or in testing work, those whose experience had been of the widest had to admit that what was demonstrated to them exceeded their anticipations. Practically every process except the production of the raw material is carried out in the factory. Even the screws are made on the premises. Possibly one of the most interesting revelations was the extent to which jigs can be devised for carrying out two or more fairly complicated operations which in the past would have necessitated a certain amount of time in changing over. This side of the business, as well as the extraordinary way in which every inch of floor space has been utilised, testified to the excellent organisation of Mr. A. E. Bennett, the general manager.

At a gathering, following the tour through the Blic shops, the managing director of the company, Mr. B. L. P. Caillard, had some terse points to drive home. He emphasised the very high—not to say vital—importance of the magneto industry, both to the military and the commercial side of the world for transport vehicles, tanks and not least aircraft and wireless—all of, which were all-dependent upon this exquisite little functioning machine. One could agree with him that it was a ghastly thought that these, before the war, should have been absolutely at the mercy of Germany before they could one and all move. And to think of it, they were pocketing the entire profits upon 95 per cent. of the magnetos upon British cars. What we had in this country to now consider and provide for was the steps to take to ensure the retention of the industries which we were now for the first time really exploiting. To this end there were two prime necessities. Firstly the creation of a real and lasting understanding between capital and labour, and secondly the ensuring that the nation—or rather the Empire—would support its own industries. And again these were dependent upon the industry being enabled to supply at a reasonable profit. To which end, a tariff would be essential and that tariff, moreover, should carry with it a clear clause, effectively stopping dumping. Then British houses need not fear competition, so long as the organisations were founded on a solid scientific and commercial basis. Mr. Caillard's opinion that the Blic Co. had so organised themselves on these lines, was endorsed with emphatic approval. The future of the Empire, he continued, was wrapped up in this problem, and if not carried through soundly, the future would be a sorry outlook. But he had distinct hopes that others in many directions were helping to ensure our future.

◆ ◆ ◆ "Plane Tales from the Skies."

EXCELLENT as was "Wing Adjutant's" first book, "The R.F.C. in the War," his second certainly surpasses it. In "Plane Tales from the Skies" he once more shows that, although he may be no stylist in writing, he does know how to tell a story. In every one of the 28 sketches which make up the book he knows exactly what he wants to show us, and he gains his objective every time with a minimum of words. Yet the atmosphere of his stories is always fresh, and there is not a dull moment from first to last. One or two of the tales we seem to have heard before, but "Wing Adjutant" tells them in such a naive fashion that it is a pleasure to meet them again.

Most of the tales concern the doings of pilots and observers on the Western Front, but two of them show something of the work—and the thrills—which fall to the lot of the kite-balloon officer. Another vividly describes a balloon trip over London at night, while another has submarine chasing in a Blimp as its theme. There is also a delightful pen-picture of a wing headquarters in England, where rumour says telephone calls occasionally go unheeded and where a G.O.C. on a tour of inspection confided that "if I had a trout stream running outside my window you would never get me on the telephone at all."

Last in the book, but certainly not least in interest, is "The Aerial Mail, 1921," in which "Wing Adjutant" conjures up for us a picture of the bi-weekly aerial mail from London to Delhi, with stops at Malta and Suez, excellently done and not overdone. The book is published by Messrs. Cassell at 2s. 6d., at which it is remarkably good value.

◆ ◆ ◆ Dyke's Auto-Encyclopedia.

We are so well supplied nowadays with encyclopedias and other books of reference to fill up the gaps in our knowledge and to help us through the hard lessons in the school of experience that we look naturally for their assistance in every walk of life. Longfellow might have had this in his mind when he wrote:—

"Honour to those whose words or deeds
Thus help us in our daily needs."

The true value of volumes of this type is only discovered in an emergency, and in the meantime we are apt to forget how true it is that "they also serve who only stand and wait." With such a book as Dyke's "Automobile and Gasoline Encyclopedia" the waiting periods are not likely to be long, for wherever it happens to be it is sure to be constantly referred to for something or other. The book covers practically all applications of the petrol motor—cars, motorcycles, motor boats, and in the new edition there is a special supplement dealing with aeroplanes and aero engines. The greater part of the book is taken up with cars and their maintenance, but, after all, much of the information on this score is applicable to other forms of motor vehicles; the principles involved are the same, although the conditions may be different. The book is divided into sections, but the carefully compiled and copious index greatly simplifies the process of locating the information desired.

Bound in dark blue cloth, the book costs one guinea (postage 9d. extra), and may be ordered through any bookseller. It is published in England by Mr. S. G. Gillam, Dome Building, Richmond, Surrey, who will be pleased to send a prospectus to anyone who would like further particulars.

Personals

Casualties.

Lieut. WILFRED GEORGE ALLANSON, R.A.F., who was killed in action on September 21st, aged 20, was the second son of Mr. and Mrs. George Allanson, of Belmont, 6 King's Avenue, Clapham Park.

Lieut. FRANK PARGETER COBDEN, R.A.F., who was reported missing after a flight over German territory on July 7th and now known to have been killed on that date, aged 21, was the youngest son of Mr. H. T. Cobden, of Faringdon, Berks. He was educated at King Alfred's School, Wantage, where he held a scholarship and was a member of the O.T.C. He offered his services in August, 1914, but was placed on the waiting list. In November, 1914, he was gazetted to a battalion of the Royal Berkshire Regt., but a year later was transferred to the Machine Gun Corps, and went to France in June, 1916. He was promoted lieutenant directly after reaching France, but was wounded in July and sent to hospital in England. He returned to France in December, 1916. In the following March, whilst playing in a football match behind the lines, he was kicked on the knee. The injury proved serious, and Lieut. Cobden spent a long time in hospital in England, and in August, 1917, he had to relinquish his commission, the injury being considered by the authorities as "not due to active service." After a few weeks he applied for and was granted reinstatement as lieutenant. Before the end of 1917 he transferred to the R.F.C., and went to the front last June.

Lieut. EDWARD WILLIAM GRIFFIN, Gloucester Regiment and R.A.F., who was killed in aerial combat on September 16th, aged 24, was the only son of Mr. and Mrs. W. T. Griffin, 115, Stamford Hill, N. 16.

Lieut. RICHARD EVELEIGH HODGSON, Liverpool Regt. and R.A.F., who was killed in action on September 16th, was the elder son of Mr. C. H. Hodgson, of Sherborne School. He was born on March 12th, 1894, and was educated at St. Christopher's, Eastbourne, and at Sherborne School, entering the School House with a scholarship in 1908. He became head of the school and captain of the cricket XI in 1912-13, and went up to New College, Oxford. In August, 1914, on the outbreak of the war, he obtained a commission in the Liverpool Regt., and went to France in May, 1915. After a few months in the trenches, he was sent, owing to ill-health, to a training school abroad. In the spring of 1917 he returned to England for an operation for appendicitis, and after a period of sick leave and light duty joined the R.A.F., obtaining his wings in the spring of this year. He went out again on August 7th, and was killed by gunfire from the ground in his first action over the enemy's trenches. He fell, however, behind our lines, and was buried by his own squadron. He was engaged to Miss Violet Grimley, of St. Crispin's, Sherborne, and was to have been married during his next leave. Lieut. Hodgson's younger brother, Capt. F. H. Hodgson, joined the R.F.C. in 1916, and is now a flight commander in the R.A.F.

Sec. Lieut. WILLIAM FRANK KEEPIN, R.A.F., previously reported missing and now reported killed, aged 17, was the only surviving son of Mrs. Keepin, of West Wrattling, Cambs. As a Boy Scout he received a medal for stopping two runaway horses attached to a military wagon at Cambridge, in May, 1916. The same year he became a sub-lieutenant in the Royal Navy, and was engaged in transport work. On April 12th, 1917, he had the experience of being torpedoed and rescued. He subsequently became attached to the R.N.A.S., and, on joining the R.A.F., was detailed for service at the front.

Lieut. ERNEST OWEN LORD, R.A.F., who was killed in action on September 18th, after four years' service, was the only son of Mr. Edward Lord, Hove, Sussex, and husband of Doris Lord, 43, Audley Road, Hendon, N.W. His age was 24.

Lieut. ALFRED GORDON WHITEHEAD, West Yorks Regt., att'd. R.F.C., who was reported missing on January 29th, and is now presumed dead, aged 25, was the youngest son of Mr. and Mrs. W. A. Whitehead, Langley, Baildon, Yorkshire. He was educated at Shrewsbury and Caius College, Cambridge. He joined the Army in 1914, and was granted a commission early in 1915. In December, 1916, he was attached to the R.F.C., and promoted to Flight-Commander in January, 1918.

Capt. WILLIAM ERNEST DAWSON, R.F.A., att'd. R.A.F., who died on September 16th as the result of a flying accident, aged 24, was the son of Mr. and Mrs. W. F. Dawson, Llantarnam Hall, near Newport, Mon.

Lieut. HERRIES KNOCKER DUDLEY-SCOTT, R.A.F., who was accidentally killed while flying on September 22nd, aged 19, was the only son of the late John Dudley-Scott, of Horsley Priory, Gloucestershire, and of Mrs. Lush, and stepson of Major R. F. Lush (late West Yorks Regt.), of Montagu House, Beccles. He was educated at Roydon Hall, Diss, and at Bedales School, Petersfield. He joined the R.N.A.S. for kite balloon service in May, 1917, served eight months with the Grand Fleet, transferred to aeroplane service in April, 1918, and was expecting to go abroad almost immediately.

Sec. Lieut. EDWARD PELL EDMONDS, R.A.F., who died in hospital abroad from wounds received in action, aged 19, was the youngest son of Richard Pell Edmonds, of Ripplemead, Cape Province.

Lieut. VAN DYKE FERNALD, R.A.F., who is now reported as having died as a prisoner in Austrian hands, was born in San Francisco in 1897, and was the son of Mr. Chester Bailey Fernald, the dramatic author. His American ancestry dated from 1630, through a long line of English colonial blood. At the period when America's entry into the war seemed doubtful, his protest was to surrender his American nationality in order to enter the British Army. From Trinity College, Oxford, he entered the University Training Corps, and was gazetted second lieutenant in the Royal West Surrey Regt. He was subsequently attached to the R.F.C., qualified as an observer, and saw six months' service on the Western Front. He then qualified as a pilot, and was sent to Italy. He was last seen on July 23rd over the Austrian front, where, having finished a reconnaissance, it is believed he stayed behind his escort, on the joint initiative of himself and his observer, Lieut. Watkins, in the hope of meeting an enemy.

Sec. Lieut. GERALD CHRISTIE ROGERSON, R.A.F., who was killed while flying on September 16th, was the eldest son of Mr. and Mrs. H. P. Rogerson, Bishop's Stortford.

Married.

Sec. Lieut. CLARENCE GILBERT BOOT, R.A.F., eldest son of the late W. H. J. Boot, R.I., and Mrs. Boot, of Hampstead, was married on September 21st at Christ Church, Hampstead, to ETHEL MARY, eldest daughter of the late Mr. and Mrs. W. J. GILBERT, of Derby.

Capt. P. J. W. CAYLEY, R.A.F., elder son of Mr. and Mrs. Cayley, was married on September 26th to WINIFRED M. STOCKEN, younger daughter of Capt. H. Stocken, late of Copthorne, Sussex.

Major F. J. L. COGAN, R.A. and R.A.F., eldest son of the late Col. M. Cogan, was married on September 28th, in London, to ELISABETH, widow of Lieut.-Col. R. O. KERRISON, Hussars.

Major ARCH. WINTER CROMBIE, R.A.F., only son of Thos. Arch. Crombie, of Chislehurst, was married on September 24th at St. John's, Paddington, to KATHLEEN DUMAS, third daughter of FREDERICK H. D. MAN, O.B.E., of 11, Hyde Park Terrace, W., and Bransbury, Barton Stacey, Hants.

Capt. A. M. R. MONTAGU, 1st K.G.O.S. and M. and R.A.F., eldest son of A. J. Montagu, Esq., and Mrs. Montagu, of Hillingdon, Surrey, was married on September 28th, at St. Mary's, Wimbledon, to MARGARET VIOLET, youngest daughter of E. S. RUMSLEY, Esq., late P.W.D., India, and of Mrs. RUMSLEY.

Sec. Lieut. BERNARD W. A. ORDISH, R.A.F., son of Mr. and Mrs. W. J. Ordish, of 19, Richmond Road, Ealing, was married on September 24th at All Saints', Ealing Common, to PHYLLIS LUCY, daughter of Mr. and Mrs. WHARRAM MEGGINSON, of 58, Hanger Lane, Ealing, W. 5.

Capt. G. JOHN SCARAMANGA, D.F.C., R.A.F., was married on September 20th at St. George's, Hanover Square, to URSULA CONSTANCE, younger daughter of Mr. and Mrs. OWEN C. BEVAN.

Capt. DAVID E. WARD, London Regt. and R.A.F., elder son of the late Alfred E. Ward, of Harrietsham, Kent, and

Mrs. Ward, of 48, Copers Cope Road, Beckenham, was married on September 28th at St. George's, Hanover Square, to MARY LIVINGSTONE, younger daughter of the late Frederick Livingstone and Mrs. Livingstone, of 33, Queensborough Terrace, W. 2.

Major O. A. WESTENDARP, R.A.F., was married on September 26th to Mrs. KATHLEEN M. DE BRAY.

To be Married.

The marriage arranged between Lieut.-Col. C. H. B. BLOUNT, The Queen's and R.A.F., and Miss BEATRICE LEMPRIERE, will take place at the church of St. Mary Abbot, Kensington, on October 16th, at 2.30 p.m.

An engagement is announced between Lieut. J. P. COX, R.A.F., second son of Mr. and Mrs. J. J. COX, Manchester, and VIOLET, only daughter of Mrs. I. PHELPS, Carsack, Sheffield.

The marriage arranged between Lieut. REGINALD GOSSE, R.A.F., and HELEN, youngest daughter of Mr. and Mrs. GORDON JONES, will take place on Tuesday, October 15th, at St. Stephen's, Gloucester Road, at 1.30.

A marriage has been arranged, and will shortly take place, between Lieut. F. J. J. BOYD HARVEY, Welch Horse and R.A.F., eldest son of the late J. Boyd Harvey, Tondur House, Bridgend, Glamorgan, and KATHERINE FRASER, second daughter of the late Mr. and Mrs. CARLILE, of Budleigh Salterton, Devonshire.

The marriage arranged between Capt. GEOFFREY HILL, M.C., R.A.F., and Miss MAY ALEXANDER will take place quietly, owing to the war, on Thursday, October 10th, at 1 o'clock, at the church of St. Columbkille, Carrickmore, Co. Tyrone.

The engagement is announced of Capt. J. E. L. HUNTER, D.S.C., D.F.C., R.A.F., only son of Ellis Hunter, Shanghai, and Miss MURIEL JEROME, only daughter of Charles Jerome, Hazeldene, Littlehampton.

The engagement is announced between Lieut. DUNCAN MACLAREN, R.A.F., only son of the late Duncan L. S. MacLaren, of New York, and Mrs. MacLaren, of Brockenhurst, and RUTH ESMÉ PARKES, youngest daughter of the late S. Alec Parkes, and Mrs. Parkes, of Enderlie, Emsworth.

The engagement is announced between Major HARRY PERCY MAYBURY, R.A.F., only son of Brigadier-General H. P. Maybury, C.B., Barnsfield, Greenhithe, Kent, and EVELYN, second daughter of Mr. S. K. KEYES, The Dene, Dartford, Kent.

The engagement is announced between Capt. E. A. PACKE, Oxfordshire and Buckinghamshire Light Infantry, attached R.A.F., of Wickham Bishops, and CLAUDIA, daughter of the Rev. and Mrs. C. W. BARCLAY, of Hertford Heath.

The engagement is announced between Lieut. EVELYN P. M. SHAW, R.A.F., only son of Mr. P. W. Shaw, M.I.C.E., M.I.M.E., and Mrs. Shaw, of Adelaide, Australia, and NORA MABEL, eldest daughter of Mr. and Mrs. Colin M. E. MAY, of Staverton, Devon.

The engagement is announced of Lieut. P. S. TAYLOR, R.A.F., second son of the late Mr. George Taylor and Mrs. Taylor, of Lyndon Road, Olton, Warwickshire, and MARJORIE, second daughter of Mr. and Mrs. Joseph ALLEN, Yardley Road, Acocks Green, Birmingham.

Items.

Major-Gen. F. H. SYKES, Chief of the Air Staff, R.A.F., had the honour of being received by the King at Buckingham Palace, on September 25th.

The parents of Lieut. RAYMOND MOORE, JUN., of the R.A.F., who was reported "missing in action" on August 12th, 1918, somewhere in France, will appreciate greatly any communication from anyone who last saw him or from any of his associate flyers. Address Raymond Moore, Sen., Peekskill, New York, U.S.A.

CORRESPONDENCE.

Hun Air "Chivalry." A Suggestion to the Royal Aero Club.

[1967] My faith in German air chivalry has gone. Let me say early in this article that I am now convinced that there is no such factor as German air chivalry in this war.

Before the war I knew many German flying men. Most of them seemed sportsmanlike, flew very well, and made themselves particularly affable. No doubt it was their business to be pleasant to Englishmen in those days, as it is now their business to be unpleasant. Apparently the Hun is able to switch on or off any good or bad quality that may suit his purpose at the time. This is a fact which many people, including some of my British airmen friends, cannot grasp.

I am one of the converts to the theory that German flying men can never be sportsmen. Some months ago I admired them as a distinct and superior class of German, but what greater proof is there of their lack of the sporting instinct than the deliberate bombing of the wounded and their brave nurses? I can assure the sceptical that from the low height which has to be maintained to machine gun people and things on the ground it is quite possible, even at night, to distinguish the difference between an ammunition dump and a hospital.

In the early days of the war many stories of Hun chivalry were reported. Some I heard from the Royal Flying Corps (now R.A.F.) pilots, who have had personal experience of this so-called chivalry. It was very gratifying to find some small spark of kindness in the Hun who was otherwise cruel. So much so that I mistakenly advertised this knightly spirit in the Press and pleaded for the Hun airman. When we heard these stories we naturally associated them with the idea that flying, an art and a sport, would attract the better

type of Hun. And so, until the bombing of military hospitals, we believed in our ideal enemy airman.

The enthusiasts for air chivalry forget that even our own sportsmanship in the air is misunderstood by the Hun mind. Count Reventlow has told us as much by suggesting that English chivalry is "worked" to give the enemy a good impression in order to cover our alleged ill-treatment of prisoners! It is well that our Royal Air Force should remember that; for what Count Reventlow can conceive of others may quite easily and without compunction be practised by the Huns themselves.

To some flying officers I suggested recently that the Royal Aero Club should cancel all pilot-aviator certificates granted before the war to men and boys of enemy nationality. The suggestion was not received very heartily then, but since the evidence of the enemy's bombing of the wounded the same officers now welcome the suggestion.

The Royal Aero Club, which is the governing authority for aviation in this country, has power to cancel or withdraw the certificates it issues to candidates who pass the official air tests. Such a withdrawal in connection with the certificates granted to Germans who flew the tests in this country would be a sign of respect for the prefix "Royal" and would show the enemy airmen what British aviation thinks of their vile work towards the helpless in hospital.

As a holder of the Club's certificate I feel entitled to put forward this suggestion as representative of the feelings of many other pilots. I am sure the central authority in France, the Fédération Aéronautique Internationale, would readily endorse it. French airmen can see through the feigned chivalry of the Hun, who, before the war, learned to fly in England and France as a part of his efficient system of air espionage.

CLARENCE WINCHESTER.

The R.A.F. Regatta.

ALTHOUGH the final accounts are not yet ready, we understand that the recent regatta at Shepperton will result in a sum of well over £800 being added to the fund which is being raised to provide equipment and comforts for the R.A.F. hospitals.

Lieut.-Gen. Sir David Henderson, K.C.B., D.S.O.

THE following announcement appeared in the *London Gazette* last Saturday:—Attached to Headquarter Units.—Area Comdt. (Cl. S.).—Lieut.-Gen. Sir D. Henderson, K.C.B., D.S.O., vice Col. G. F. Phillips, C.B., C.M.G., who relinquishes the temp. rank of Brig.-Gen. August 10th, 1918.

The Guild of St. Michael.

THE Guild of St. Michael for Airmen was inaugurated at St. Michael, Ashford, Middlesex, by Cardinal Bourne. In the course of his sermon the Cardinal said that it was fitting that this new and potent weapon, and those who wielded it, should be placed under the special patronage of one who stood near to the throne of God, the great archangel St. Michael. There was ever before us the thought of that tremendous conflict which took place once in the heavens—St. Michael and his angels doing battle with the dragons, with Lucifer and his angels, the fight between the powers of Good and Evil.

THE ROYAL AIR FORCE

London Gazette, September 24th.

The following temp. appointments are made at the Air Ministry:—
Director.—Lieut.-Col. B. H. O. Armstrong, and to be Temp. Col. whilst so employed; April 1st.

Assistant Directors.—Graded for purposes of pay as S.O. 1, and to be Temp. Lieut.-Cols. whilst so employed:—(Capt. (Temp. Maj.)), J. F. Hawkins, Capt. (Temp. Maj.), G. Waddell; April 1st.

Staff Officers, 1st Class.—And to be Temp. Lieut.-Cols. whilst so employed:—J. A. H. Gammell, D.S.O., M.C. (Capt., R.A.), and is granted a temp. commn. as Capt.; Aug. 20th. Maj. H. S. Steele-Perkins; Aug. 23rd.

Staff Officers, 2nd Class.—And to be Temp. Majors whilst so employed, if not already holding that rank:—Capt. J. W. Griggs, Lieut.-Col. R. W. Hogarth, Capt. C. G. Milnes, Capt. F. B. Rigby, Maj. E. E. Robb, Maj. A. Struben, Capt. A. M. Taylor, Lieut. (Temp. Capt.) H. S. Watson; April 1st. Capt. (Temp. Maj.) H. St. C. Smallwood, vice Capt. (Temp. Maj.) P. le G. Gribble, who relinquishes the temp. rank of Maj.; Aug. 19th.

Staff Officers, 3rd Class.—And to be Temp. Captains whilst so employed, if not already holding that rank:—Lieut. H. Chalkley, Capt. W. H. Clegg, Capt. W. A. Daft, Capt. H. T. Humphreys, Lieut. H. Hooper, Capt. J. E. A. Greatorex, Lieut. (Temp. Capt.) C. H. Simpson, Capt. G. G. Shepherd, Capt. H. M. Winstanley, Capt. N. H. Wood; April 1st. W. P. Durnall (Lieut., R.N.V.R.), and is granted a temp. commn. as Capt.; April 16th. Capt. H. E. Steinberg; April 22nd. Capt. C. F. Brightman; May 6th.

Staff Officers, 4th Class.—And to be Temp. Lieutenants whilst so employed, if not already holding that rank:—Lieut. (Temp. Capt.) H. A. Adams, Lieut. H. Booker, Capt. G. H. W. Dawson, Sec. Lieut. A. Davies, Sec. Lieut. P. D. Stonham, Lieut. (Temp. Capt.) H. T. Thompson, Sec. Lieut. A. B. Turner, Capt. A. F. Wickenden; April 1st. Sec. Lieut. H. E. Crowcroft, Sec. Lieut. A. E. Hale; June 10th. Sec. Lieut. H. F. Robertson; June 14th. Sec. Lieut. W. S. Sholl; June 21st. Sec. Lieut. E. B. Roscoe; July 10th.

The following temp. appointments are made:—

Staff Officers, 2nd Class.—And to be Temp. Majors whilst so employed:—Lieut. (Temp. Capt.) F. Jewell, Lieut. (Temp. Capt.) S. T. Smith, Lieut. (Temp. Capt.) A. G. Stradling; Aug. 24th. (P.) Capt. P. Laing; Aug. 20th.

Staff Officer, 3rd Class.—Lieut. (Temp. Capt.) C. S. Fulton, and to retain his temp. rank while so employed, vice Capt. E. N. E. Waldron; June 10th. H. R. Radford (Temp. Capt., New Armies) and is granted a temp. commn. as Capt.; Aug. 4th. Capt. W. St. J. Scott-Scott; Sept. 4th. (Q.) Sec. Lieut. W. Myers, M.C., D.C.M., and to be Temp. Capt. while so employed; July 22nd.

Staff Officer, 4th Class (1st Grade).—Capt. W. Hayward; Aug. 21st.

Staff Officer, 4th Class (2nd Grade).—Capt. C. S. Nunn; Aug. 21st.

Flying Branch.

Lieutenants to be Temp. Captains, whilst employed as Captains. (A.):—H. B. Free, W. A. Landry; July 1st. (Hon. Capt.) G. W. Benson, T. B. Bully, A.F.C., G. M. Carter, H. E. Faulkner, H. C. Haydock, E. D. C. Herne, R. V. Kann, F. G. Taylor, C. J. Thompson, R. K. Tailyour, N. W. Wickham, C. E. Young, Aug. 1st. L. S. Arbuthnot; Aug. 15th. A. I. Campbell-Robertson, H. G. Davis, (Hon. Maj.) F. I. Tanner, and to be Hon. Maj.; Aug. 28th. J. W. Fogben, G. F. Ward; Aug. 20th. G. R. Beck, H. Briggs, D.F.C., N. E. Barracough, M.C., W. T. Breach, A. Boyle, M.C., R. G. Hammersley, R. T. Mark, M.C., P. Pike, J. W. Schofield, H. L. Webster, A. E. M. Waterton, R. G. Weller, W. E. Windover, J. C. Wollett; Sept. 1st. (Hon. Capt.) A. W. Williams; Sept. 4th. E. Swale; Sept. 5th. A. Beck, S. T. Liversedge, W. S. Philcox; Sept. 6th. J. W. Pearson; Sept. 7th. P. T. Iaccaci, D.F.C.; Sept. 8th. J. W. Foreman, W. G. Westwood; Sept. 10th. W. R. May; Sept. 12th. E. D. Ashbury, E. S. Coler, J. Collier; Sept. 13th. R. N. Chandler, D. W. M. Miller; Sept. 16th.

Lieutenants (O.) to be Lieutenants. (A.):—R. C. Purvis; Aug. 28th. C. G. Fenton, G. G. Roberts; Aug. 31st. O. D. Norwood; Sept. 3rd. E. M. Farncomb; Sept. 4th. F. G. C. Dickinson; Sept. 8th. T. H. Uphill; Sept. 9th.

Lieut. H. A. Pound, M.C. (late Gen. List, R.F.C., on prob.), is confirmed in his rank as Sec. Lieut. (A.) and to be Hon. Lieut.; June 11th.

Sec. Lieutenants. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieutenants. (A.):—W. J. Johnson; April 12th. W. T. F. Macquire; July 8th. J. M. Rankin; July 11th. G. E. Dorman; July 12th. F. H. Joyes, A. Beedie, W. F. Gordon, H. Gatfield, P. L. Teasdale, A. B. Dunn; July 13th. R. C. Blanchard, F. L. McArthur, H. B. Travis; July 18th. F. R. Pemberton; July 20th. L. C. Rattle, H. J. V. Wood, T. L. Jones; July 21st. C. H. Living; July 22nd. A. Galt, F. A. McHugh; July 23rd. B. H. Matthews; July 25th. R. L. Tailion; July 26th. G. W. Cormack; Aug. 2nd. W. T. Carew; Aug. 5th. H. V. Jones; Aug. 6th. L. R. Haskell; Aug. 7th. R. W. Johnson, T. K. Bentley, T. D. Goord; Aug. 12th. G. I. Neale; Aug. 13th. H. A. McGrath, W. N. Simpson; Aug. 14th. T. G. Reed, H. D. Anderson, T. G. Braine, F. J. Wilcock; Aug. 18th. J. E. Jennings; Aug. 21st. L. F. Hewnham; Aug. 25th. H. R. Acteson; Aug. 28th. L. E. Allanson; Aug. 29th. G. Goad, R. W. Willis, T. Whitaker (date of 1st commn. March 7th), R. Menzies; Aug. 30th. J. C. Stone, W. H. Cox, H. Ellison, R. L. Uden, H. Entwistle (date of 1st commn. Feb. 24th, 1918), E. W. C. Densham, J. C. Lewis, A. J. F. Ross, R. B. Hyslop, E. H. Allott, F. A. Samuelson, H. C. R. Grant, R. Morris, G. M. Fossick, R. N. Cresswell, L. L. Chapman, J. B. Hatley, T. H. Garlick, H. Macmillan, A. Turner, J. L. Bullard, D. G. Cooper; Aug. 31st. G. F. Shreve; Sept. 1st. A. J. Newnham, C. S. Hosegood; Sept. 3rd. G. E. Watson; Sept. 4th. B. Solomons, E. R. Williams, L. F. Hodges; Sept. 5th. L. D. Hamblin, E. O. W. Ayles; Sept. 6th. R. E. Morton, A. C. Davis; Sept. 7th. L. Inggs, P. Dickinson, D. H. Godden, W. G. White, C. Wilson; Sept. 8th. J. Russell, E. S. W. Smith, F. C. Bowler; Sept. 9th.

The following are granted temp. commns. as Sec. Lieutenants. (A.):—A. J. D. Rowan; May 11th. C. B. Rait (Temp. Lieut., Camn. Highrs.), and to be Hon. Lieut.; May 27th (substituted for notification in Gazette, July 30th). F. A. Best (temp. Sec. Lieut., attd. R. Sus. R.); June 24th. E. M. Drummond (Sec. Lieut. R. Highrs.); July 8th. W. U. Hodson, M.C. (Temp. Lieut. York. R.), and to be Hon. Lieut.; July 13th. W. R. Davison (Lieut. R.F.A., T.F.), and to be Hon. Lieut.; Aug. 15th. E. B. B. Jefferson (Lieut., L'pool. R.), and to be Hon. Lieut.; Aug. 16th. A. A. English, M.C. (Lieut., R.E.), and to be Hon. Lieut.; F. R. Witham (Temp. Sec. Lieut., Northd. Fus.); Aug. 18th. H. J. Bullock (Lieut., Norf. R.), and to be Hon. Lieut.; Aug. 24th. R. B. Francis (Lieut., Can. M.G.C., C.E.F.), and to be Hon. Lieut.; Aug. 28th. F. H. Osborne, (Sec. Lieut., Scottish Horse Yeo., T.F.); E. C. Powell (Sec. Lieut., L'pool. R., T.F.); R. G. S. Thomson (Sec. Lieut., L'pool. R., T.F.); Aug. 29th. D. M. Layton (Lieut., W. Ontario R., C.E.F.) and to be Hon. Lieut.; J. Redmond (Sec. Lieut., L'pool. R., T.F.); Aug. 30th. K. L. Harris (Lieut. York. R., T.F.), and to be Hon. Lieut.; C. Dixon (Sec. Lieut., N. Cyclist Bn., T.F.); C. H. W. Clarke (Sec. Lieut., R. Fus.); W. P. James (Temp. Sec. Lieut. R.W. Surr. R.); H. W. Ogg (Sec. Lieut., High. L.I., T.F.); L. B. Hawkswell (Lieut., W. York. R., T.F.), and to be Hon. Lieut.; L. H. Tuppen (Temp. Sec. Lieut., Norf. R.); A. J. Franklin (Temp. Lieut. R. Dub. Fus.), and to be Hon.

Lieut.; C. E. F. Searle (Lieut., W. Kent Yeo., T.F.), and to be Hon. Lieut.; C. P. Lee (Sec. Lieut., Lond. R., T.F.); V. Foster (Temp. Sec. Lieut., S. Lan. R.); J. H. Manicon, M.C. (Temp. Sec. Lieut., R.W. Surr. R.); M. K. McGregor (Temp. Lieut., Sco. Rif.), and to be Hon. Lieut.; J. L. Jones (Temp. Sec. Lieut., K.R. Rif. C.); A. G. Batterham (Sec. Lieut., R.W. Surr. R.); Aug. 31st. D. S. Cumberlege (Temp. Capt., A.S.C.), and to be Hon. Capt.; T. Farrar (Temp. Sec. Lieut., R. Ir. Rif.); Sept. 1st. G. W. Armstrong (Temp. Sec. Lieut., Northd. Fus.); M. E. Patterson (Lieut., Alberta R., C.E.F.), and to be Hon. Lieut.; C. L. Matson, M.C. (Lieut., Lanc. Fus., S.R.), and to be Hon. Lieut.; Sept. 2nd. B. P. Jones (Lieut., Middx. R., S.R.), and to be Hon. Lieut.; E. D. Trask (2nd Lieut. R.F.A., T.F.); Sept. 3rd. W. R. Barnett (Sec. Lieut., Shrops. L.I.); Sept. 5th. R. Sadler (Temp. Sec. Lieut., attached R. War. R.); Sept. 8th.

The following Prob. Flight Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lieutenants. (A.):—A. E. Roberts; April 23rd. R. F. J. Dixon; May 19th. S. E. Matthey; Aug. 15th. E. B. Markwick; Aug. 16th. C. H. Clarke, A. F. Welch, A. M. Taylor; Aug. 20th. N. D. Hume, E. C. Rutter, K. Stuart-Smith; Aug. 30th. H. I. Fryer, E. S. Burns; Aug. 31st. E. P. M. Pearson; Aug. 31st. W. H. Brown, G. F. Underhay, G. G. Marsland, D. A. Busby; Sept. 2nd. G. Dutton; Sept. 4th. F. B. Shaw; Sept. 5th. R. E. W. Gwyther; Sept. 6th. H. G. Luther; Sept. 9th.

The following Flight Cadets are granted temp. commns. as Sec. Lieutenants. (A.):—S. C. Francis; July 6th. J. F. Lohead; July 29th. D. C. Sewell; Aug. 5th. M. L. P. Chapman; Aug. 9th. H. J. Thorn; Aug. 16th. C. Craib, L. A. Combes; Sept. 6th. J. W. Garratt; Sept. 8th. R. Wood, C. W. Daggett, H. Jackson; Sept. 10th. W. H. Russell; Sept. 11th. L. Badger; Sept. 13th. Lieut. T. Llewellyn to be Lieut. Observer Officer from (A.); Aug. 30th.

The following Sec. Lieutenants. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieutenants. (Observer Officers):—H. L. Herman; April 30th. H. S. Lindfield; May 12th. G. Pattinson; Aug. 30th. W. Shaw (date of 1st commn. Feb. 7th); Sept. 5th. A. G. White; Sept. 6th. J. Ferguson; Sept. 7th. A. T. Rose; Sept. 14th. N. P. Jones, P. H. Montgomery; Sept. 19th.

The following are granted temp. commns. as Sec. Lieutenants. (Observer Officers):—H. O. Edmonds (Sub-Lieut. R.N.V.R.), and to be Hon. Lieut.; June 22nd. R. C. Cowl (Temp. Sec. Lieut., E. York. R.); Aug. 1st. F. H. Glover (Lieut., L'pool. R., T.F.), and to be Hon. Lieut.; Aug. 18th. C. A. Bonar (Temp. Sec. Lieut., attd. Glouc. R.); Aug. 27th. G. H. Tarras (Lieut., Gord. Highrs., T.F.), and to be Hon. Lieut.; A. R. Wyld (Temp. Sec. Lieut., N. Lan. R.), D. E. Llewellyn (Temp. Sec. Lieut., Ches. R.); Sept. 2nd. D. R. Morgan (Temp. Sec. Lieut. Welsh R.); Sept. 3rd. H. W. H. Argyle (Temp. Sec. Lieut., W. York. R.); J. L. Bromley (Temp. Lieut., A.S.C.), and to be Hon. Lieut.; C. H. Case (Temp. Sec. Lieut., Manch. R.); D. S. Fox (Lieut., Notts. and Derby R., T.F.), and to be Hon. Lieut.; E. Preece (Temp. Sec. Lieut., High. L.I.), A. B. Radford (Lieut., S. Staffs. R., S.R.), and to be Hon. Lieut.; W. L. Roberts (Lieut., Middx. R.), and to be Hon. Lieut.; W. L. A. Wilkinson (Temp. Sec. Lieut., Lan. Fus.); T. E. Bruce-Adams (Lieut., Durh. L.I., T.F.), and to be Hon. Lieut.; W. G. Lacey, M.C. (Temp. Lieut., A.S.C.), and to be Hon. Lieut.; M. F. Wright (Temp. Lieut., R.E.), and to be Hon. Lieut.; Sept. 6th. M. O. I. Griffiths (Capt., Suff. R., S.R.), and to be Hon. Capt.; R. A. Adams (Lieut. C. Ontario R., C.E.F.), and to be Hon. Lieut.; W. Hamley (Lieut., R.F.A., T.F.), and to be Hon. Lieut.; C. W. Langdon (Lieut., Glouc. R., T.F.), and to be Hon. Lieut.; G. T. Burrill (Sec. Lieut., E. Lan. R., T.F.), P. Chavasse (Sec. Lieut., I.A.R.O.), H. V. Irving (Temp. Sec. Lieut., Northd. Fus.), H. P. Jeppe (Sec. Lieut., R.G.A., S.R.), H. L. Smith (Temp. Sec. Lieut., Notts. and Derby R.), G. Adamson (Temp. Sec. Lieut., Durh., L.I.) H. W. Blakeney, M.C. (Lieut., R.E.), and to be Hon. Lieut.; L. F. Gross (Temp. Sec. Lieut., Northd. Fus.), R. C. Murray, D.C.M., M.M. (Sec. Lieut., R.G.A., S.R.), L. Radford (Sec. Lieut., R.G.A.), W. F. Wilson (Sec. Lieut., R.F.A. S.R.), F. A. Garwood (Sec. Lieut. Bedf. R.), L. W. Sharpe (Lieut., C. Ontario R., C.E.F.), and to be Hon. Lieut.; J. E. Kemshall (Lieut., Notts. and Derby R., T.F.), and to be Hon. Lieut.; R. C. Norris (Capt. Rif. Brig., S.R.), and to be Hon. Capt.; A. P. Thompson (Temp. Sec. Lieut., York and Lanc. R.); Sept. 14th. P. Loftus (Temp. Sec. Lieut., attd. R. Muns. Fus.), C. C. Loretto (Temp. Sec. Lieut. R. Muns. Fus.); Sept. 19th. F. Vaillant (Lieut., Can. Forestry Corps, C.E.F.), and to be Hon. Lieut.; I. B. Boyce (Lieut., Lond. R., T.F.), and to be Hon. Lieut.; T. Pitkethly, M.M. (Lieut., Quebec R., C.E.F.), and to be Hon. Lieut.; Sept. 23rd.

The following Flight Cadets are granted temp. commns. as Sec. Lieutenants. (Observer Officers):—D. Denne, M. W. Edwards, W. L. Folkard, H. R. Hardcastle, H. A. McKay, W. G. McGregor, S. B. Perry; Aug. 15th. F. R. Irvine, L. J. Ryall, R. Spencer, C. W. Martin, A. E. Sell, G. E. Lewtas, W. Mylam, F. L. Innes, S. A. W. Sechell, J. J. Smith, C. S. Muir, W. R. Waterman, L. W. Kitt, W. C. Ingram; Sept. 12th. J. Hamilton, W. S. Patterson, D. A. Allen, J. F. Lyon, T. L. Calvert, F. Coutts, H. Smith, W. Wallace; Sept. 13th. A. J. Richardson, G. H. New, W. H. R. Jarvis, B. V. Featherstonhaugh, K. F. Pedley; Sept. 20th. B. G. Drake, M. W. R. Hey, J. L. Irving, W. T. Neilson, A. E. Popham, E. Soutar, J. P. Thomas, J. Longley, A. A. Maddan, R. R. Parker, G. Riley, H. L. Terry, R. J. Wilson; Sept. 21st. F. H. Turrell, A. J. Spencer, T. R. Lole, R. L. Seymour, H. Lansdale, S. G. Floate, T. W. Blaxter, L. G. P. Robinson; Sept. 22nd. F. Naylor, W. H. Beite; Sept. 23rd.

Capt. R. C. M. Smith relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt.; Sept. 25th.

Lieut. G. S. Page relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lieut.; Sept. 25th.

Lieut. J. E. Philbrick relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lieut.; Sept. 25th.

Lieut. J. V. Barry relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lieut.; Sept. 25th.

Sec. Lieut. H. N. Lee relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; Sept. 24th.

The following Sec. Lieutenants. resign their commns. having been found permanently unfit for further instruction as pilots or observers:—W. B. Carter, H. Goodier, W. D. Howie, C. McCoombes, W. P. Purvis; Sept. 25th.

The date of appt. of Lieut. D. M. Deighton as Capt. is June 17th, and not as in Gazette Aug. 20th.

The initials and surname of Sec. Lieut. J. E. Brooks are as now described, and not as in Gazette July 30th.

The surname of Flight Cadet William Alexander Greig is as now described, not Creig, as in Gazette July 19th.

The surname of Lieut. A. L. Huether is as now described, and not as in Gazette Sept. 3rd.

The notification in Gazette, July 30th, concerning Sec. Lieut. H. J. Ough is cancelled.

The notification in Gazette Sept. 6th concerning Sec. Lieut. W. Thompson is cancelled.

The surname of Flight-Cadet James MacDonell is as now described, and not MacDonald as in Gazette Sept. 3rd.

The Christian names of Flight-Cadet John Edmond Whitehead are as now described and not "John Edward" as in *Gazette* Aug. 27th.

The graduation date of Flight-Cadet John Charles Coleman Lovelace is Aug. 22nd, and not June 25th as in *Gazette* Sept. 3rd.

Administrative Branch.

Lieut. (Temp. Capt.) H. A. Whelen to be Temp. Maj. whilst employed as Maj.; Sept. 14th.

Lieuts. to be Temp. Capts. whilst employed as Capts.:—C. L. Mitchell; May 27th. P. J. Curd; Sept. 1st. F. B. Luget from (T.); Sept. 14th.

Sec. Lieuts. (Temp. Lieuts.) to be Temp. Capts. whilst employed as Capts.:—G. H. Blake, D.C.M., A. J. Bright; Sept. 1st.

Sec. Lieut. H. A. Maynard to be Temp. Capt. whilst employed as Capt., from (T.); Aug. 14th.

Lieut. A. F. Tabraham to be Lieut., from (T.); June 6th. (Substituted for notification in *Gazette* Aug. 30th.)

Lieut. W. S. Cole, C.M.G., D.S.O. (late R.N.V.R.), is granted a temp. commn. as Capt.; July 29th.

The following are granted temp. commns. as Lieuts., and to be Hon. Capts.:—F. Dickinson (Capt., Leic. R.); June 12th. P. W. McLean (Capt., Sea. Highrs.); Sept. 9th. T. E. Gentles (Temp. Capt., Labour Corps); F. F. McKenna (Temp. Capt., York and Lanc. R.); Sept. 11th. T. Rumney (Lieut., R.F.A.) is granted a temp. commn. as Lieut.; June 1st.

Lieuts. (A.) to be Lieuts.:—C. S. Wells; April 1st. C. D. B. Stiles; Aug. 8th. D. H. Houston; Sept. 1st. G. G. Coury, V.C.; Sept. 5th. A. D. Martin; Sept. 7th. G. H. Leonard; Sept. 12th. E. G. Roberts; Sept. 13th.

Lieuts. (O.) to be Lieuts.:—E. T. Turner; July 3rd. J. A. Gorges; Sept. 9th. A. R. Sheppard; Sept. 14th. E. M. Smith; Sept. 17th.

Capt. A. G. Macdonald reverts to Lieut. from (O.); Sept. 12th.

Sec. Lieuts. to be Temp. Lieuts. whilst employed as Lieuts.:—(Hon. Lieut.) T. Hobson; July 1st. C. Gruchy; Aug. 26th.

A. J. E. Sumner is granted a temp. commn. as Sec. Lieut., and to be Temp. Lieut. whilst specially employed; Sept. 1st.

The following are granted temp. commns. as Sec. Lieuts.:—G. Earl; Aug. 6th. T. L. Grey, and to be Hon. Lieut.; Sept. 12th. H. Seely, S. H. Meintjes, M. V. Collier, J. W. Smith, E. H. Hamilton, A. E. Wycherley, A. J. H. Homan, M. Worms, W. R. Taylor, F. N. Trier, E. J. Syer, S. T. Pye, M. P. Stoneham, H. W. Levy, T. A. Myers, C. W. M. Sabine, C. A. Seymour, A. W. H. Keen, H. P. Johnson, A. H. Hicks, P. C. Heming, T. L. Gulliver, L. O. Duncan, C. A. Broadhurst, C. R. Cunningham, F. Bunting, S. Howard, I. Green, W. J. Terry, W. Wood, S. McK. Pullen, J. A. Peoples, E. A. Taylor, J. W. Tough, A. Gall, W. J. A. Rogers, R. W. Simpson, W. J. Terry, J. K. Henderson, V. F. Maude; Sept. 20th. E. J. Cam, E. C. Fisher, F. T. Harris, T. H. Lamb, L. M. Moss, A. Nash, and to be Hon. Lieut. T. A. Rowlands, C. H. Sims, T. Sutherland, and to be Hon. Lieut., W. J. Tuck, C. Wallace, A. E. Walker, G. Workman; Sept. 21st.

The following Sec. Lieuts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lieut.:—J. W. Clark, E. W. Ridgway; Sept. 25th.

Sec. Lieut. H. Roughton relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; Sept. 25th.

The date of relinquishment of Capt. R. D. Bartlett (Lieut., R.N.V.R.) is July 8th, and not as in *Gazette* July 9th.

Technical Branch.

Capt. to be Temp. Maj. whilst employed as Maj.:—B. C. Clayton from (A.); Aug. 14th. C. E. Fairburn; Sept. 9th.

Lieuts. to be Temp. Capts. whilst employed as Capts.:—M. A. Chappell, W. L. Joseph; May 15th. T. Moore; June 10th. (Hon. Capt.) W. E. Smith; Aug. 1st. H. H. Kilby, A. T. Wynward-Wright from (A.); Sept. 1st. P. B. Moxon; Sept. 9th. Sec. Lieut. (Temp. Lieut.) W. W. Scott-Davidson to be Temp. Capt. whilst employed as Capt. from (Ad.); Sept. 1st.

Sec. Lieuts. to be Temp. Lieuts. whilst employed as Lieuts.:—A. W. Brittain, J. Bullock (Hon. Lieut.), H. M. Rootham, C. W. B. Tubbs; July 1st. M. S. Keogh; July 23rd. S. G. Yapp; Aug. 26th. J. N. Eastcott, W. A. Gaye, J. Mackie, W. Stanton, W. K. Yarnold; Sept. 1st. A. T. Williams; Sept. 10th. (Hon. Lieut.) G. R. Waters; Sept. 14th.

Lieut. H. W. L. Poole to be Lieut. from (A.); May 3rd.

Lieut. G. S. B. Fuller to be Lieut. from (O.); July 1st.

A. J. Toomer is granted a temp. commn. as Sec. Lieut.; Sept. 23rd.

The following relinquish their commns. on ceasing to be employed:—Capt. N. W. Hughes (Lieut., R.N.V.R.); Sept. 13th. Sec. Lieut. P. J. Bertin; Sept. 19th.

Medical Branch.

H. A. Treadgold is granted a temp. commn. as Capt. and to be Temp. Maj. while so employed, but without pay and allowances of that rank; Sept. 2nd.

Dental Branch.

A. C. S. Cottam is granted temp. commn. as Lieut.; Sept. 21st.

Memoranda.—To be Temp. Lieut.-Cols.—Capt. M. Deacon, while employed as Chief Water Engr.; Maj. J. K. D. Restler, while employed as Chief Elec. Engr.; April 1st.

Hon. Lieut. J. C. Pape is granted hon. rank of Capt. while employed as Insp. A.I.D.; Sept. 4th.

W. Myers, M.C., D.C.M. (Sec. Lieut., North'd Fus.), is granted temp. commn. as Sec. Lieut.; July 15th.

Col. (Temp. Brig.-Gen.) W. B. Caddell relinquishes temp. rank of Brig.-Gen. Aug. 20th.

Lieut. (Temp. Capt.) W. T. C. Riley relinquishes his temp. rank on ceasing to be employed as Station Adjt.; July 11th.

The notification in *Gazette* July 9th concerning Lieut. B. Turner is cancelled.

London Gazette, September 27th.

The following temp. appointments are made at the Air Ministry:—

Staff Officers, 2nd Class.—Capt. C. L. D. Wilcox, and to be Temp. Maj. whilst so employed; Sept. 9th.

Staff Officers, 3rd Class.—And to be Temp. Capts. whilst so employed, if not already holding that rank:—Lieut. (Temp. Capt.) J. K. Mountain, vice Lieut. (Temp. Capt.) H. N. Nowell; May 31st. Lieut. C. J. S. Holden, vice Lieut. (Temp. Capt.) H. Atkins; July 12th.

Staff Officers, 4th Class.—Sec. Lieut. (Hon. Lieut.) R. V. J. S. Hogan, and to be Temp. Lieut. whilst so employed, vice Sec. Lieut. (Temp. Capt.) H. J. Taplin; May 22nd. The following temporary appointments are made:—

Staff Officers, 2nd Class.—And to be Temp. Maj. whilst so employed:—Lieut. (Hon. Capt.) F. Lindsay; July 14th. Lieut. (Temp. Capt.) P. C. Hoyland, vice Capt. (Temp. Maj.) T. M. Eggar; Sept. 14th. (Air) Capt. (Temp. Maj.) A. Murray; Aug. 5th. (Q.) Lieut. (Temp. Capt.) R. A. Trelease; Aug. 11th.

Staff Officers, 3rd Class.—Capt. J. J. Breen, vice Lieut. (Temp. Maj.) P. C. Hoyland (Sept. 14th) (P.); Capt. F. F. Loyd; Sept. 6th.

Staff Officers, 4th Class (2nd Grade).—(Substituted for notification in the *Gazette* of Sept. 17th) Lieut. V. L. Anderson; June 17th. Capt. G. B. Anderson; Aug. 7th.

Flying Branch.

Lieuts. to be Temp. Capts. whilst employed as Capts. (A.):—J. D. D'A. Northwood, P. E. Welchman, M.C., D.F.C.; Sept. 13th. (Hon. Capt.) E. B. Drake; Sept. 14th. H. P. Chubb, G. M. Duncan; Sept. 16th. G. T. Wix; Sept. 17th; A. F. Peacey; Sept. 19th. F. Belway; Sept. 20th. F. J. Cunningham; Sept. 21st.

Capt. (Temp. Maj.) J. H. C. Minchin relinquishes the temp. rank of Maj. on reversion to Capt. (A.) from S.O.; July 15th.

Lieut. J. S. Chaudler to be Temp. Capt. while employed as Capt. (K.B.); Aug. 7th.

Sec. Lieut. (Hon. Lieut.) C. N. Poynton, M.C., to be Temp. Lieut. (K.B.) while employed as Balloon Comdr.; Sept. 12th.

Flt. Cds. are granted temp. commns. as Sec. Lieuts. (A.):—E. E. Dafoe; Aug. 22nd. F. W. Taylor, S. D. Evans, W. E. Osterburg, C. D. Neill, K. K. Johnson, R. C. McLeod, F. N. York; Sept. 12th. J. A. Carr, F. D. Robinson, W. J. Brown, F. H. N. Marson, A. Sorley, G. W. A. Ireland; Sept. 13th. H. H. Gilbert, D. N. King, W. Simpson, C. G. Davies, J. H. O'Grady; Sept. 14th. H. P. Clarke; Sept. 15th. G. H. Smith; Sept. 17th.

S. N. Hill (Lieut., attd. Middx. R.) is granted a temp. commn. as Sec. Lieut. (A. and S.), and to be Hon. Lieut.; April 20th. (Substituted for notification in the *Gazette* of May 24th.)

J. Duncanson (Lieut., Can. M.G.C., C.E.F.) is granted a temp. commn. as Sec. Lieut. (A. and S.), and to be Hon. Lieut.; May 30th. (Substituted for notification in the *Gazette* of July 5th.)

W. J. Collett is granted a temp. commn. as Sec. Lieut. (A. and S.); Sept. 16th.

Flt. Cds. are granted temp. commns. as Sec. Lieuts. (A. and S.):—A. W. Macdonald, M. D. Laurensen; June 14th. G. Dobell; July 6th. A. H. Murison; July 13th. R. A. Grant; July 23rd. J. Donnan, S. A. Goodman, F. C. Greene, R. J. Joubert, S. R. Hooper; Aug. 13th. R. S. Koller, C. U. Church, R. S. Hancock; Aug. 24th. V. Heller, G. J. Hofmeyr, H. V. Hinwood; Aug. 31st. E. W. Highton; Sept. 12th. J. I. Buirski, G. W. H. M. Devenish, C. J. G. Hunter, J. H. H. Douglas, W. H. Spencer, P. H. Davis, C. H. Dickson, B. P. Hawkins, W. V. Berry, W. G. Baker, E. W. Harris, R. G. H. Hopley; Sept. 14th.

Cdt. C. N. Watson is granted a temp. commn. as Sec. Lieut. (K.B.); May 6th.

Flt. Cds. are granted temp. commns. as Sec. Lieuts. (Observer Officers):—A. Lister, B. Carlton-Smith; Aug. 23rd. R. Mackinnon, R. A. Sinclair; Sept. 16th. R. L. Rogers, F. A. Wilson, F. W. Byrne, F. H. Wilcockson, R. G. Molenkamp, F. P. Regan, C. C. Graham; Sept. 25th.

The following relinquish their commns. on ceasing to be employed:—Sec. Lieut. (Hon. Lieut.) W. H. Lyell (Lieut. Gord. Highrs.); Aug. 14th. Capt. J. Whittaker (Capt., E. Lancs. R.T.F.); Sept. 5th. Lieut. S. Lambert (Lieut. E. Yorks. R., T.F.); Sept. 6th.

Lieuts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lieut.:—P. Francis, H. P. Stewart, C. A. Vick; Sept. 28th.

Lieuts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lieut.:—J. L. Heard, D. W. Mason; Sept. 28th.

Sec. Lieut. (Hon. Lieut.) W. O. Ford relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lieut.; Sept. 28th.

Sec. Lieut. G. Randall relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; Sept. 28th.

Lieut. T. G. Kernick resigns his commn., having been found permanently unfit for further instruction as pilot or observer; Sept. 28th.

Sec. Lieuts. resign their commns., having been found permanently unfit for further instruction as pilots or observers:—J. G. Anderson, A. H. Bristow, J. R. S. Cox, J. L. Eastwood, A. L. E. Edwards, J. Gannon, W. L. P. Gould, W. B. Jones, L. Marriott, S. H. Roberson, J. J. Ward; Sept. 28th.

The rank of Lieut. S. J. Brewer is as now described, and not as stated in the *Gazette* of July 23rd.

The name of Raymond Jack Tucker is as now described, not "Jack Tucker Raymond," as stated in the *Gazette* of Sept. 3rd.

The notification in the *Gazette* of June 28th, regarding Sec. Lieut. A. Wilkinson, is cancelled.

The notification in the *Gazette* of May 21st, concerning Capt. D. A. Watson, is cancelled.

The notifications in the *Gazette* of Sept. 10th, concerning the undermentioned Flight Cadets, are cancelled:—C. A. Spooner, A. Russell, J. B. Robson, B. Riley, S. Perkins, R. F. Tomlinson.

The notification in the *Gazette* of Sept. 17th concerning Flight Cdt. A. V. Kidd is cancelled.

Administrative Branch.

To be Temp. Capts. while employed as Capts.:—Sec. Lieut. G. P. Abbott, from (T.); Sept. 9th. Lieut. J. C. B. P. Seaver; Sept. 17th.

J. W. Culme-Seymour (late Lieut. R.N.V.R.) is granted a temp. commn. as Capt.; Aug. 16th.

The following are granted temp. commns. as Lieuts.:—M. Delaney (late Qrmr. and Hon. Lieut., Yorks R.); June 4th. R. L. C. Brooker (Maj., ret. pay), and to be Hon. Maj.; June 11th. B. F. Ford (Lieut., Devon R.), and to be Temp. Capt. while employed as Capt.; Aug. 1st. F. Badham, M.C. (Temp. Lieut., Welsh R.); Sept. 3rd. E. C. Meyer (Lieut., Essex Yeo.); Sept. 11th. E. W. Burrin (Temp. Lieut., W. Yorks R.); Sept. 16th.

H. F. Green (Sec. Lieut. R. Fus.) is granted a temp. commn. as Sec. Lieut., and to be Temp. Capt. while employed as Capt.; Sept. 17th.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts.; J. A. Anderson; July 30th. G. E. Nicol; Sept. 10th.

The following are granted temp. commns. as Sec. Lieuts.:—T. P. Jones; April 1st. E. R. W. Lincoln; June 1st. K. M. Grahame (Temp. Sec. Lieut., D. of Corn. L.I.); June 18th. R. W. P. Butler (Temp. Sec. Lieut., Rif. Brig.); July 1st. A. F. Woods; Aug. 27th. H. T. Evans (Temp. Sec. Lieut., Labour Corps); Sept. 5th. S. G. Menell; Sept. 20th. W. W. Archer, W. T. Gilmour, M. T. Sanderson; Sept. 21st. W. E. Andrews, R. W. Forsyth, H. N. Hasler, H. Murnaghan, C. T. Parker, W. J. Pigott, H. T. Robinson, D. R. Samuel, P. F. Westernman; Sept. 23rd. J. Vinns, D. S. G. Burton, J. S. Card, A. G. Darling, G. A. Denty, A. T. Iles, W. Littlemore, H. R. Mayes, W. H. Shaylor; Sept. 26th. A. K. O. Cochrane (late Capt., Yorks R.), and to be hon. Capt.

Capt. R. G. G. Harley (Lieut., R.N.V.R.) relinquishes his commn. on ceasing to be employed; Aug. 10th.

Lieut. A. F. Britton, M.C., relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lieut.; Sept. 28th.

Sec. Lieut. H. N. Bulley resigns his commn.; Sept. 28th.

Sec. Lieut. A. W. McCulloch resigns his commn. to resume his medical studies, and is granted the hon. rank of Sec. Lieut.; Sept. 28th.

Sec. Lieut. T. McI. Ross relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; Sept. 28th.

The appointment of Lieut. (Hon. Capt.) A. Cleave is antedated to July 30th.

The date of appointment of Lieut. G. H. Watts as Temp. Capt. is April 1st and not as stated on page 8628 of *Gazette* July 23rd.

The surname of Sec. Lieut. (Hon. Lieut.) A. Duthie is as now described and not as stated on page 10789 of *Gazette* Sept. 13th.

Technical Branch.

Maj. J. U. Kelly, D.S.O., to be Maj. from (A.); Sept. 11th.

Sec. Lieuts. to be Temp. Lieuts. whilst employed as Lieuts.:—(Hon. Capt.) M. F. L. Selby, and to be Hon. Capt.; July 27th. A. J. Morris; Sept. 12th.

Lieut. B. E. Leeson to be Lieut. from (O.); July 26th.

The following are granted temp. commns. as Lieuts.:—A. W. Isherwood (Sub-Lieut., R.N.V.R.); Aug. 15th, sen. from April 1st; H. W. N. Drummond (Lieut. Brit. Col. R. D., C.E.F.); Sept. 27th.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts.:—W. West, C. J. Langman, St. J. G. C. Clerke; April 18th. A. H. Opie; April 26th. F. J. P. Disney; Aug. 29th. E. E. Lewis; Sept. 7th.

Sec. Lieuts. (Ad.) to be Sec. Lieuts.:—J. E. Betts; June 13th. H. E. G. Richards; Aug. 3rd. G. H. Mewes; Aug. 17th. J. S. Hodgson; Aug. 24th. R. J. Adam; Aug. 31st. F. E. Openshaw, W. T. Daniell, H. J. Jones; Sept. 7th. R. L. G. Simpson, W. E. Truman, A. S. Wall; Sept. 10th. R. V. Weeks, E. Sparshott; Sept. 11th.

Lieut. S. P. Ashton to be Sec. Lieut. and to be hon. Lieut. from (Ad.); Sept. 7th. The following are granted temp. commns. as Sec. Lieuts.:—C. Wilson (Sub-Lieut., R.N.V.R.), and to be hon. Lieut.; Sept. 1st. T. W. Cummins; Sept. 14th. W. T. T. Glasbrook, B. Greig, H. E. Powell, H. B. Smith, H. F. Wilkins; Sept. 23rd. W. B. Bond, E. J. Hindsley, F. J. Matthews, B. E. D. Pratt; Sept. 26th.

Capt. A. C. Lovesy (Lieut., R.N.V.R.) relinquishes his commn. on ceasing to be employed; Aug. 31st.

Lieut. G. H. Heeley relinquishes his commn. on account of ill-health and is granted the hon. rank of Lieut.; Sept. 28th.

Medical Branch.

E. G. Fearnside is granted temp. commn. as Capt., and to be hon. Maj.; Sept. 23rd.

R. B. Lilly is granted a temp. commn. as Capt.; Sept. 25th.

The following are granted temp. commns. as Lieuts.:—E. F. Wilson; Sept. 23rd. S. A. Clark; Sept. 25th.

Dental Branch.

H. O. Salt is granted a temp. commn. as Lieut.; Sept. 23rd.

Memoranda.—Sec. Lieuts. (on prob.) relinquish their commns. on ceasing to be employed:—T. F. Lavelle; May 11th. R. T. Mackenzie; June 22nd.

Sec. Lieut. (on prob.) H. L. Sellar relinquishes his commn. on account of ill-health and is granted the hon. rank of Sec. Lieut.; Sept. 28th.

The date of appointment of Capt. J. J. Meakin as Temp. Maj. is May 24th, and not as stated on page 8,629 of the Gazette July 23rd.

Sec. Lieut. E. A. Parnell to take rank nad precedence as if his appointment as Sec. Lieut. bore date Aug. 16th.

Royal Flying Corps (Military Wing).

London Gazette Supplement, September 24th.

Flying Officers.—Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank:—N. D. K. Kennedy; Nov. 1st, 1917. W. Shaw-Thompson; Jan. 12th. R. MacC. Marshall; March 10th.

Flying Officers (Observers).—Lieut. A. C. Malloch, Canadian Engrs.; July 27th, 1917, seniority July 16th, 1917; Temp. Sec. Lieut. H. Orchard, Wilts R., and to be transfd. to R.F.C., Gen. List; Aug. 11th, 1917, seniority May 17th, 1917.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

General Headquarters, September 24th.

"Overcast and rainy weather continued till late in the day on September 23rd, when conditions began to improve. At night there was a clear sky. Enemy activity in the air was slight and intermittent. Our squadrons persisted throughout the day in their various tasks, including observation for artillery fire. Eight hostile machines were destroyed and three driven down out of control. Four of our machines are missing. In addition, two German machines were brought down by our anti-aircraft batteries. Only 1½ tons of bombs were dropped by us in daylight, but after the moon rose our night-flying squadrons attacked enemy aerodromes, railheads, and hutments with vigour and effect, dropping 17½ tons of bombs without losing a machine."

General Headquarters, September 25th.

"In fine, but cloudy weather, our squadrons carried out a great deal of useful work on September 24th. Over 2,000 photographs were taken and our reconnaissance machines covered a wide area both by day and night. Observation for our artillery was given as usual by our aeroplanes and balloons, which reported much damage in enemy battery positions as the result of our fire. Twelve and a half tons of bombs were dropped during the 24 hours, two German aerodromes and several railway junctions being heavily attacked. There was much aerial fighting, in the course of which 31 hostile machines were destroyed, together with eight balloons. Twenty-two hostile machines were driven down out of control. Our missing machines number 10."

Headquarters R.A.F., Independent Force, September 25th.

"On the 25th inst. our squadrons attacked the enemy aerodrome at Bulh with good results. Bursts were observed on and near the hangars. All our machines returned. One squadron attacked Kaiserslautern, bursts being observed near the station and munition factories. Our machines were attacked on the return journey by large numbers of enemy aircraft, and protracted fighting took place, as a result of which two enemy machines were destroyed. Three of our machines have not yet been located."

Headquarters R.A.F., Independent Force, September 26th.

"With reference to yesterday's communiqué, it has now been established that during the raid on Kaiserslautern, two enemy aircraft were shot down out of control, besides the two already reported destroyed. In addition to the machines reported missing, one reconnaissance machine has not returned. At noon on the 25th inst. our aeroplanes attacked the factories at Frankfurt with good results. Large numbers of enemy aircraft were encountered and very heavy fighting took place, as a result of which five enemy aircraft were shot down out of control. Four of our machines failed to return."

General Headquarters, September 26th.

"On September 25th, in cloudy but improving weather, our observation machines were actively at work. In air fighting, 10 enemy machines were destroyed, and three driven down out of control. Another enemy machine was brought down in flames at night. During the 24 hours we dropped 35 tons of bombs on hostile aerodromes and railway connections. Three of our aeroplanes are missing."

Headquarters R.A.F., Independent Force, September 27th.

"In conjunction with the operations undertaken yesterday by French and American troops, our machines in the afternoon attacked railways at Metz-Sablon and Audun-le-Roman, with very good results. Large numbers of enemy aircraft were encountered, and bitter fighting took place. Two enemy aircraft were destroyed and one shot down out of control. Six of our machines failed to return. During the night of the 26th-27th further heavy attacks were made on Metz-Sablon, and many direct hits were observed. The railways at Mezières, Thionville, and Ars, and Frescaty aerodrome were also heavily attacked. Several direct hits were observed on Thionville Station and on the railway junction. The total weight of bombs dropped during the day and night was 13½ tons. All our night-flying machines returned."

General Headquarters, September 27th.

"The perfect co-operation between the commanders of neighbouring units and formations and between the infantry, artillery, Tanks, and aircraft, and the gallantry and resource displayed by all ranks have again enabled complete success (in the advance towards Cambrai) to be achieved at relatively small cost."

"Our machines had a busy day on September 26th, carrying out a large number of reconnaissance flights and watching the effect of our artillery fire. Over 20 tons of bombs were dropped on enemy dumps, railheads, and billets. In a raid on an enemy aerodrome, several hangars were set on fire, a hostile machine was destroyed on the ground, and seven others which attempted to repel the attacking squadrons were shot down. Four more hostile machines were destroyed on other parts of the front. Five of our machines were missing during the day. Little flying was possible at night. We dropped three-and-a-half tons of bombs without loss to us."

General Headquarters, September 28th.

"Our machines were active on every part of the front throughout September 27th, and kept close watch from the air on the course of the various operations. Bombing patrols were carried out at a low altitude on the battle front, and enemy troops and transport at the Canal crossings and along the roads were heavily engaged with machine-gun fire by our pilots. Our machines working in co-operation with the artillery reported a great number of targets and observed the fall of the rounds. Many explosions and fires were seen to be caused in hostile battery positions. Over 1,000 photographs were taken in the course of the day. In addition to extensive bombing just beyond the lines, several enemy aerodromes and a number of railway junctions were attacked with excellent effect. Many of our night-bombing machines made several journeys over the lines. Thirty

tons of bombs were dropped by us by day and 18½ tons by night. Twenty-two German machines and eight hostile balloons were shot down by our airmen. Twenty of the enemy's machines were driven down out of control in the course of air fighting. Another machine was destroyed by our anti-aircraft fire. Nineteen of our machines are missing."

General Headquarters, September 29th.

"The Air Force co-operated in every phase of Saturday's operations. Patrols carried out their flights far behind the German lines, reconnoitring roads and railways both by day and by night, and reporting the trend of enemy movements. In spite of clouds and rain, some very successful observation work for our field and heavy batteries was accomplished by aeroplanes and balloons. The location of our advancing troops was constantly reported by contact patrols to the Headquarters of formations. Bombs were dropped and machine-gun fire was operated from an extremely low height on the enemy's troops, transport trains, and gun teams. Heavy casualties were inflicted. Twenty-two enemy machines were destroyed during the day and three driven down out of control. Twenty-four of our machines are missing. The total weight of bombs dropped during the day was 22 tons. At night bombing was continued with even greater intensity, although weather conditions were not favourable. Thirty-four tons were dropped by us, many machines continuing their attacks almost until dawn. All our night flying aeroplanes returned safely."

Admiralty, September 29th.

"Royal Air Force contingents working with the Navy are co-operating in the Belgian offensive, and during yesterday approximately 13 tons of bombs were dropped. Two trains were set on fire, and several ammunition dumps destroyed. Massed motor transports and a hostile battery were also attacked, and casualties were inflicted by low-flying machines on concentrations of infantry, horse-gun teams, and other enemy formations, whilst spotting was successfully carried out for British monitors shelling the German coast defences. During the latter part of the day hostile aircraft in large formations—working well on the enemy side of the lines—were encountered. Four enemy machines were destroyed, and four driven down out of control. Thirteen of our machines are missing, the majority of which failed to return from over the enemy lines after a sudden and violent rainstorm in the early hours of the morning."

French.

Paris, September 24th.

"Balkans.—The enemy columns, closely followed by our advance guards, harassed by cavalry and machine-guns, and bombarded by Allied aeroplanes, are falling back in the greatest disorder towards Veles, Ishtip, and Strumnitza. "At Krivolak the Serbians, besides the booty already reported, captured some new aeroplanes and motor cars, as well as big petrol and food dumps."

Paris, September 25th.

"The weather having improved, it has been possible to resume operations in the air, which had been temporarily interrupted owing to the bad weather conditions prevailing during the preceding days. Nine machines were brought down or put out of action, and one captive balloon was set on fire. Our reconnoitring machines have explored the enemy front and brought back numerous photographs. During the night five tons of projectiles were dropped on the railway stations of Longuyon and Marie Barancourt. Several hits were observed on these stations, where both fires and explosions occurred."

Paris, September 26th.

"During the day of the 25th five enemy aeroplanes were brought down or put out of action. During the night bombarding aeroplanes dropped over 21 tons of bombs on bivouacs in the region of Laon and railway stations and dumps, particularly on the stations of Mont Cornet, Marle, and Laon, and on the railway lines leading to those places. Numerous hits on the targets, which caused fires and explosions, were observed."

Paris, September 27th.

"During the daytime of the 26th the fine weather enabled our Air Service to employ all the means at its disposal to co-operate in the battle. By means of numerous reconnaissances and pushes far behind the German lines, and by the many photographs secured, our reconnoitring patrols kept Headquarters effectively informed of all movements of enemy troops and convoys, as also of the activity on his principal lines of railway. Our bombers, profiting by the information thus secured, dropped during the daytime 26 tons of projectiles in the rear zone of the battle and, in particular, on the crossings of the Alin (north of Tahure), and in the region of Somme-Py. During the night the work of our bombers was continued with equal vigour. A total of 23½ tons of bombs was dropped on enemy cantonments and bivouacs in the rear of the front, on enemy aviation grounds, and railway stations, and particularly on those of Laon, Longuyon, Le Châtelet, and Amagne. Several fires occurred as a result of these bombardments. Finally, our fighting planes, by their vigorous action, rendered observation on the part of the enemy air service almost impossible, and achieved very great success. Forty-two enemy machines were brought down or put out of action, and seven captive balloons were set on fire in the course of the day."

Paris, September 28th.

"During the day of the 27th our airmen continued to take an active part in the battle. Our bombing squadrons by means of their expeditions both by day and by night have not ceased to harass enemy troop transports and to attack enemy convoys. Twenty-five tons of projectiles have been dropped behind the battle front, notably to the north of the Somme-Py-Challerange railway, on the important centres of the Medech Farm and of Ardeuil, and on the passages of the Alin. During the night the railway stations of Longuyon and Audun-le-Roman and the aviation ground of Stenay were copiously bombed. Our crews brought

down nine German machines and set one captive balloon on fire. Lieut. Fonck brought down six enemy machines during the 26th."

Paris, September 29th.

"In spite of the very bad weather, our air service during the day of September 28th performed important work. Intervening directly in the battle, it bombarded and machine-gunned the troops on the ground. Twice groups of over 50 aeroplanes attacked the enemy's reserves, which had been prepared for a counter-attack in the ravines of Marvaux and Liry. Twenty tons of bombs were dropped and several thousands of rounds fired on these troops. During the day 15 enemy aeroplanes were shot down or driven down out of control, and three captive balloons set on fire."

U.S.A.

Paris, September 28th.

"American airmen have kept command of the air. They have brought down 12 balloons and more than 60 enemy planes, while less than a third of that number of our planes are missing. In conjunction with French and British airmen, they have, notwithstanding unfavourable weather, rendered valuable service and successfully executed many missions."

Italian.

Rome, September 22nd.

"The Chief of the Italian Naval Staff gives the following details of the work of the Italian and American naval aircraft in the gulfs of Venice, Trieste, and on the Quarnero."

"Half a ton of explosives was dropped at night on the submarine station of Pola on September 15th, and over a ton on September 19th. On September 17th in air fighting two enemy machines were forced to descend, and a third fell damaged near Grado. One Italian machine was lost in flying over Fiume. The airsheds at Lagosta Island were bombed on September 19th; and over a ton of explosives was dropped on military barracks in Albania, causing big fires, on the 14th. One machine is missing."

"The roads of Durazzo were bombed on September 17th, 19th and 20th, with

two tons of explosives, two steamers have been severely damaged, and a big fire was observed near the enemy aircraft station. The enemy bombed Venice without doing any military damage."

Rome, September 24th.

"An enemy aeroplane was brought down in air fighting."

Rome, September 27th.

"Numerous cruising reconnaissance and bombardment flights were made. Three enemy aeroplanes were forced to land in their lines."

Rome, September 28th.

"An enemy plane was brought down in air fighting."

Belgian.

Havre, September 27th.

"On September 27th two enemy balloons were brought down in flames by our airmen. One of them was brought down by Flight-Lieut. Coppens, who thus achieved his 31st victory."

German.

Berlin, September 24th.

"Lieut. Rumev achieved his 41st aerial victory."

Berlin, September 25th.

"Yesterday we brought down in aerial battles 28 enemy aeroplanes and six captive balloons. Lieut. Rumev achieved his 42nd aerial victory, and Lieut. Jakobs his 30th."

Berlin, September 26th.

"Seven aeroplanes were shot down out of enemy squadrons which attacked Frankfurt and Kaiserslautern."

Berlin, September 28th.

"Yesterday we shot down 33 enemy aeroplanes. Lieut. Rumev achieved his 45th aerial victory."

Berlin, Sept. 29th.

"Yesterday we shot down 32 enemy aeroplanes and three captive balloons."

SIDE-WINDS.

TITANINE, LTD., is to be the name for the future of the British Aeroplane Varnish Co., Ltd., the well-known makers of Titanine dope. The registered offices will remain, as previously, at Empire House, 175, Piccadilly, London, W.1.

THE portfolio of types of British aircraft published by Messrs. Brown Bros., Ltd., proved so popular that they have produced another series. They are reproductions of paintings by Mr. Geoffrey Watson, and are certainly spirited. They include Spad, Horace Farman, Caproni bi- and triplanes, S.H.I.A., and Caudron twin-engined machines. Unfortunately the high price of paper, strawboard, and in fact everything connected with their reproduction has risen so much that Messrs. Brown Brothers are compelled to ask those of our readers who would care to possess a set of these pictures to share with them the cost of printing and postage. To this end they are asking that all applicants should enclose sixpence in stamps when writing, which they think is more than justified by the intrinsic value of the pictures. The edition is strictly limited, and early application is to be advised. All letters should be addressed to Department 14, Messrs. Brown Brothers, Ltd., 22 to 34, Great Eastern Street, London, E.C.2, and marked "Aircraft Portfolio" in the upper left-hand corner.

MESSRS. LLEWELLYN RYLAND's new varnish, which they designate "Rylard," came on to the market at an opportune moment, and the knowledge and experience gained by its use under active service conditions must inevitably produce a wide scope for its use after the war. The many peculiar

advantages which "Rylard" possesses speak well for the research department of this old firm of varnish manufacturers, who evidently are "as much alive" as ever in being among the first to put on the market "just the thing" required.

MESSRS. E. A. ROOME AND Co., having decided as a respite from their labour to revive the annual staff outing—during the war it has been in abeyance—a river trip was arranged. It took place on Saturday, September 28th, 1918, the party embarking at Richmond and journeying up the river to Chertsey, where luncheon was served. The chair was taken by the managing partner, Mr. F. J. Gayer, who expressed the hope that the coming peace might bring renewed prosperity and a closer co-operation between all employers and employees to assist to that end. On the return journey tea was taken at Kingston, and during the trip, made so successful by the energetic committee, the piano was kept busily employed.

PUBLICATIONS RECEIVED.

Third Annual Report of the National Advisory Committee for Aeronautics: 1917. Washington, U.S.A.: Government Printing Office.

Magnetic Measurements and Experiments (with Answers). By A. Risdon Palmer, B.Sc., B.A. Murby's Science Series. London: Thomas Murby and Co., 6, Bouverie Street, E.C.4. Price 2s. 6d. net.

The £ s. d. of Flying. By Capt. Arthur J. Swinton. London: The Aeroplane and General Publishing Co., Ltd. Price 6s. net.



At the Humber Sports Meeting, the second this year, promoted by the Humber Recreation Society, in aid of the local Prisoners of War Fund. On the left, a group of officials, including Colonel J. A. Cole, Director; A. H. Niblett, Works Manager; and J. T. Allbutt, Secretary. Mr. Alexander and Mr. Hallabond (the well-known Midland handicappers) and Mr. E. C. Holmes, the referee, are also in this group. On the right, the successful "Humber" girls' team in the Relay Race, with, in the centre, the Welfare Supervisor, Mrs. S. Knightley.

COMPANY MATTERS.

Vickers, Ltd.

THE report of Vickers, Ltd., states that the protracted negotiations with the Government which led to the long delay in presenting the accounts for 1915 have now been brought to a conclusion, and the directors submit the balance-sheet for that year. The period is now so far off that the directors remind shareholders that the war extensions at work during 1915 were those which the company undertook before the formation of the Ministry of Munitions. The great national programme of the latter was only adopted in time to begin construction of the shop extensions connected with it in the late months of that year. The important additions and reorganisations alluded to in the reports for 1913 and 1914, and some of the extensions commenced in 1915 on the initiative of the company, were, however, in full working order, and enabled the company to bear a very large share in meeting demands. The figures include under creditors provision for levies and taxes on excess profits under the Munitions of War and Finance Acts. The balance of £767,429 left after payment of the interim dividends, and after transfer of £250,000 to general reserve, allowed the payment of final dividends in March and April, 1916, of 2½ per cent. on the preferred stock and preference shares, and of 7½ per cent., free of income tax, on the ordinary shares, amounting together to £447,680. This left a final balance of £319,750 to be carried forward to 1916, against £228,877 in the previous year. The directors have a peace programme under the most careful consideration, and have made extensive preparations. It is clear, however, that much expenditure will have to be incurred in the replacement of machines suitable for war purposes only and in carrying the higher proportions of stocks and work in progress that peace trades require. The extensive connections that have been formed both by the parent company and by the subsidiary companies will be of the greatest use in increasing the old peace trades, and in disposing of their new products. In view of these and possible further combinations, the directors ask shareholders to further increase the capital in ordinary shares to £12,000,000. It is proposed, subject to Treasury consent being obtained, to issue 1,850,000 new shares at 30s., offering these to present shareholders at the rate of one share for every three now held. When this issue is taken up, it is the intention of the directors to give the necessary notice and to pay off the 5 per cent. third mortgage debentures. There is no power to pay off compulsorily the 4½ per cent. second mortgage debentures, but of these there will only be a small amount outstanding after December 1st, 1918, which will be paid off automatically in the following year. The proposed offer will be made to holders on the register at October 10th, 1918. With the addition of the new 6,450,000 ordinary shares of £1 each, ranking with the existing ordinary shares, the capital will be £13,500,000, in £750,000 preferred 5 per cent. stock, 750,000 5 per cent. preference shares of £1 each, and 12,000,000 ordinary shares, of £1 each. The directors also seek power to capitalise all or any part of the money (including premiums on shares issued at a premium) standing to reserves and issue the shares to existing holders.

NEW COMPANIES REGISTERED.

C. H. ALLENBY AND CO., LTD.—Capital £1,000, in £1 shares. Bolt, nut, &c., manufacturers, engineers, manufacturers of and dealers in aeroplanes, motors, &c. First directors: H. K. Allen and C. P. Palmer.

ALLIED INDUSTRIES, LTD.—Capital £25,000, in £1 shares. Engineers, metal and wood workers, aeronautical, motor and electrical engineers. First directors: A. A. Embiricos, A. R. Beeby, G. de Feure, W. E. Fordham, F. J. Osborn and E. R. Bird.

THACKER, BELL AND CO., LTD., 44-46, Leadenhall Street, E.C.—Capital £1,000, in £1 shares. Acquiring business carried on as the "Aircraft Construction Co." at 44 and 46, Leadenhall Street, E.C., and at Harley Works, Beckton Road, Plaistow. The first directors are E. H. Bell and R. S. Thacker.

Aerial Ambulances in the U.S.

FOLLOWING the success of the first aerial ambulance in connection with a U.S. training aerodrome, it is reported from New York that the Department of Military Aeronautics has authorised the use of such machines at all training centres. The machine consists of a standard school machine, with the rear cockpit cleared and enlarged sufficiently; a combination of folding seats, which allow an injured man to rest easily; he is strapped in a slightly propped-up position, with the head toward the pilot and the feet and legs extending into the fuselage.

British Workmanship.

A RECENT experience of an R.A.F. officer on the Western Front bears witness to the quality of the workmanship which is put into British aeroplanes. The pilot had just succeeded in bringing down a German Fokker biplane when he was attacked simultaneously by several other German machines, which poured in a concentrated fire. In order to escape from this hail of bullets the English pilot put his machine into a spin, and, having shaken off his assailants, flew home. When he had safely landed his machine it was discovered that the main spars of all four planes had been shot through, as well as both longerons, and in addition a bullet had lodged in one of the magnetos. How the machine, in such conditions, stood the strain of the downward spin and the homeward flight is a marvel, but it is obvious that the smallest piece of faulty workmanship or material would certainly have involved the total loss of both aeroplane and pilot.

Deaf Mutes Useless as Aviators.

SOME little time ago it was reported from America that deaf mutes had been found to make useful aviators, but later reports from Washington go to show that the idea is erroneous. Tests have been carried out by the Medical Research Laboratory at Mineola, L.I., with a view to ascertaining what effect the absence of the delicate balancing apparatus that exists in normal inner ears has upon persons who are without them. Normal men and deaf mutes were flown at different times blindfolded. The flights included level flying, climbing, left and right turns, dips and banks. The passengers were asked to record the directions. The deaf mutes failed completely. They could not even note changes of 90°. Normal passengers reported changes as slight as 5°. Consequently the individual with less sensitivity to a change of position is really less efficient in the air.

Aeronautical Patents Published.

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors.

Applied for in 1917.

The numbers in brackets are those under which the Specifications will be printed and abridged, &c.

Published October 3rd, 1918.

- 12,325. A. E. DOWNING. Propulsion of aeroplanes. (118,659.)
 12,921. H. C. CLEAVER. Propellers. (118,683.)
 13,296. G. DE FEURE AND A. A. EMBIRICOS. Aeroplanes. (118,693.)
 14,490. G. J. AND G. AYLING. Girders, spars, struts, &c., for aeronautical machines. (118,714.)
 16,439. J. I. HALL AND CALLENDER'S CABLE AND CONSTRUCTION COMPANY. Aerodrome lighting for landing of aircraft. (118,739.)

Applied for in 1918.

The numbers in brackets are those under which the Specifications will be printed and abridged, &c.

Published October 3rd, 1918.

- 1,662. W. TAYLOR. Levels and inclinometers for aircraft. (118,785.)

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